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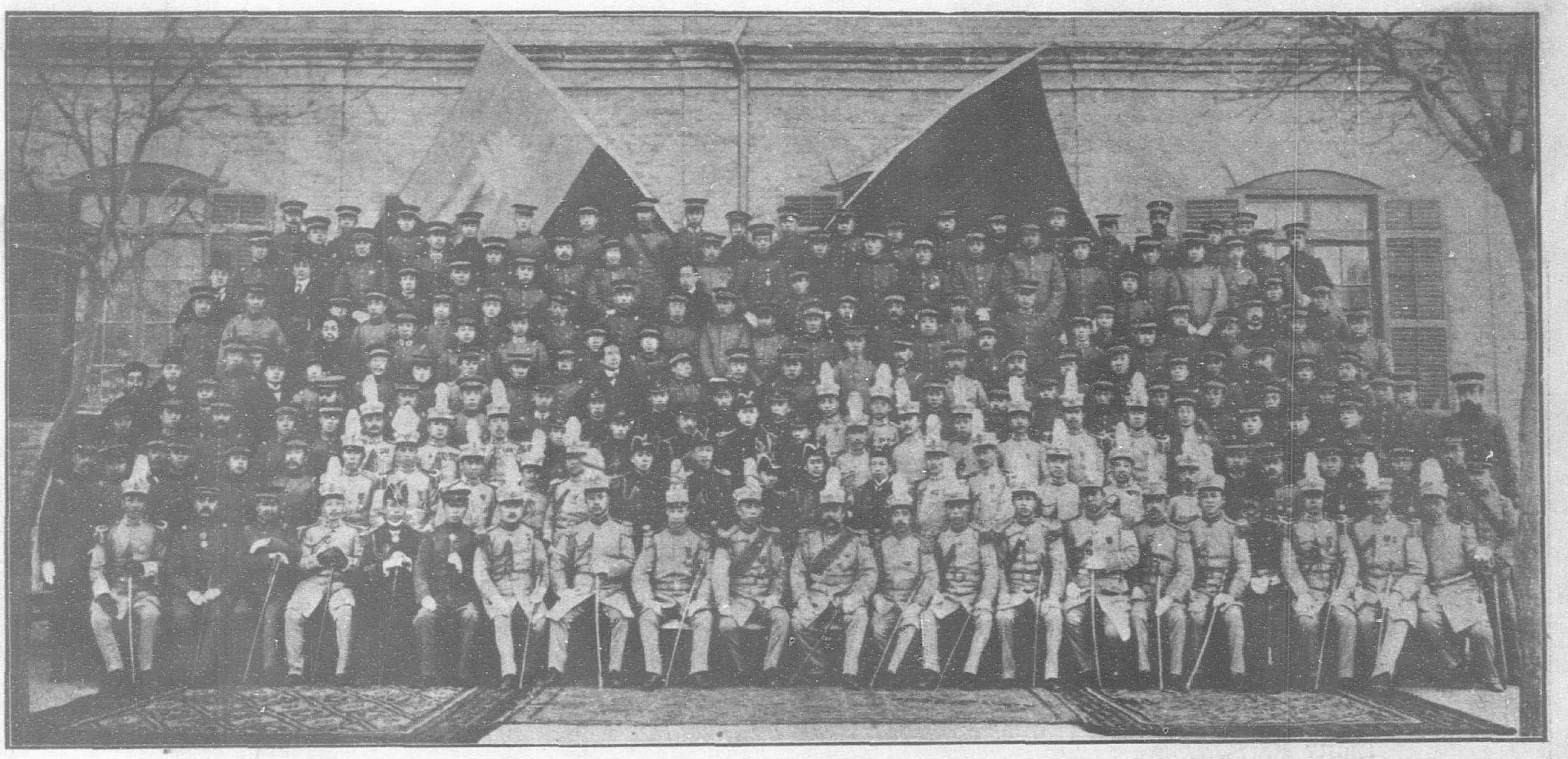
RANGOON RIVER TRAINING WORKS

SUCCESSFUL COMPLETION OF A GREAT PROJECT



The General Staff of the Chinese Army. Vice-President Li Yuan-hung is in the centre of the bottom row.

CHINA'S NEW CONSTITUTION

OFFICIAL TRANSLATION OF THE TEXT

SCIENTIFIC INVESTIGATION IN THE PHILIPPINES

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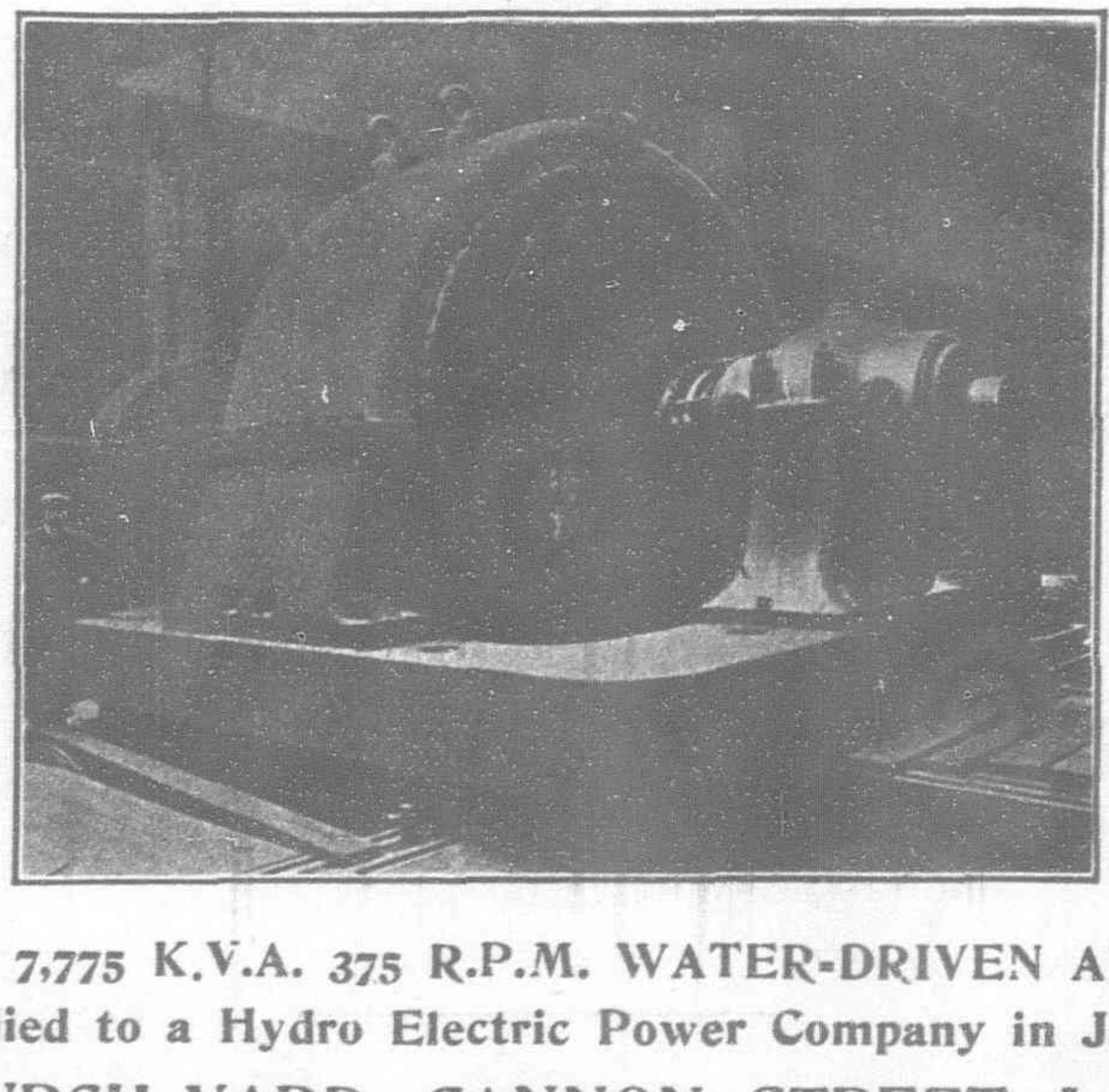

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THE FAR EASTERN REVIEW

COMMERCE :-: ENGINEERING :-: FINANCE

VOL. X. SHANGHAI AND MANILA, MAY, 1914 No. 12

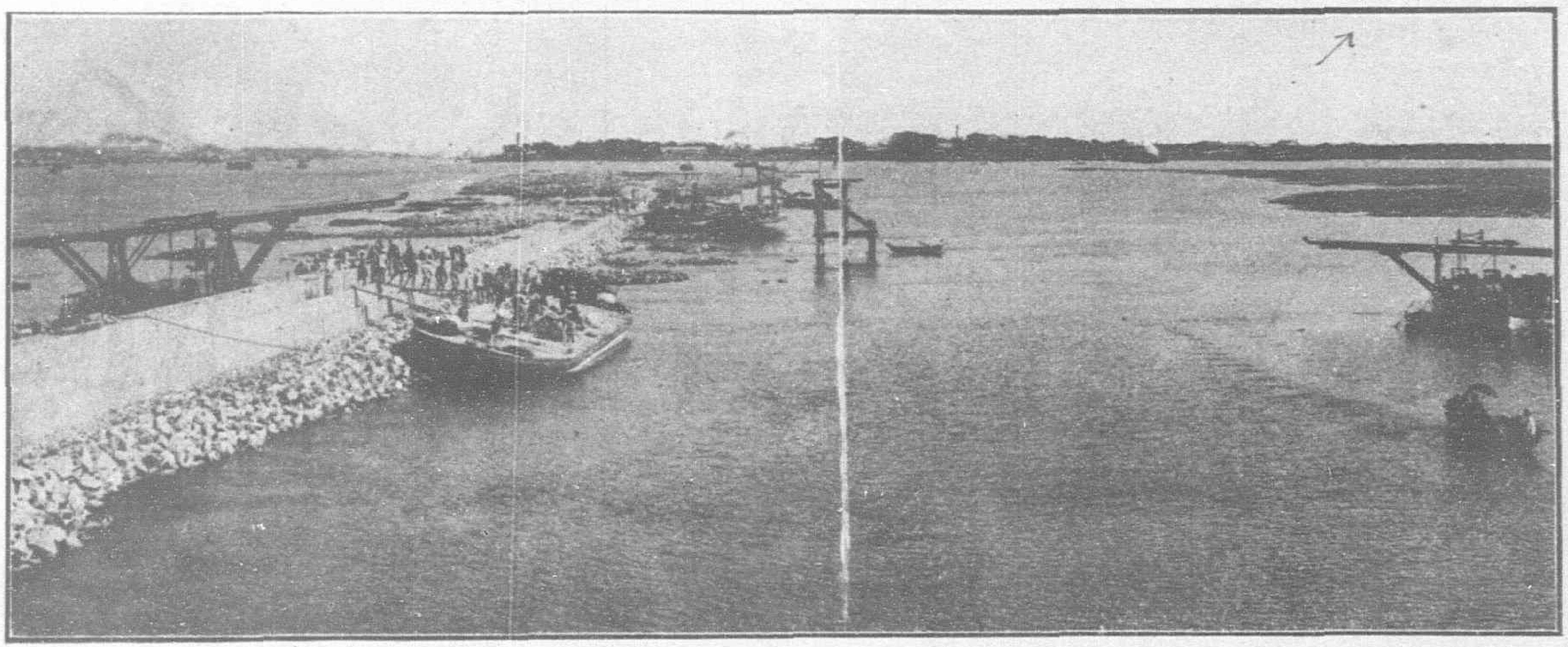
RANGOON RIVER TRAINING WORKS

SUCCESSFUL COMPLETION OF A GREAT PROJECT

Rangoon for a number of years lay under the shadow of a menace. As far back as 1879 silt and erosion were threatening to render the river useless for the navigation of craft of any size. By the completion of the Rangoon River Training Works on February 17, 1914, the shadow has been lifted, and the people of Rangoon are now assured that the city's position as third port of the Indian Empire will be maintained.

An extremely interesting description of the Training Works, well illustrated,* was published by our contemporary the *Rangoon Times*, and we are indebted to its columns for the material on which this article is based.

The Rangoon River is that on which is situated the town of the same name. It is formed by the junction of the Hlaing and Panhlaing Rivers, five miles above the town, and is joined by the Pazundaung Creek and Pegu River three miles below the town. The Hlaing—swift flowing, and short when compared with Burma's great river the Irrawaddy — rises in the Pegu Yomas. The Panhlaing is an off-shoot of the Irrawaddy, and the mean ebb discharge of the Rangoon River above the town throughout all tides during the year is about 300,000 cubic feet per second with a mean velocity of four feet per second. Immediately above the town and harbour the river takes a right angle bend, the course of the river being thus changed from one of North to South, to another of East to West. This change of direction so abrupt, has resulted in the erosion of the right or concave bank, and the formation of a deep embayment. There is no record to show when the erosion or scouring out process on the Seikgyi side of the bend commenced. Probably it began about the early fifties. At any rate a plan of the Rangoon River in 1824 shews the river of the normal width. In the opinion of Mr. G. C. Buchanan, C.I.E., M.I.C.E., the Chairman and Chief Engineer of the Rangoon Port Trust, there was at one time a great deal more water flowing down the Panhlaing Creek than at present, and the resultant force caused by the junction of the Hlaing and Panhlaing Rivers infringed on and eroded the left bank until an obstacle was encountered. The main stream was then diverted to the right bank where it found an easily eroded material, and steady erosion has continued to the present time. The erosion was, however, prevented from creeping down stream further than it has done by a projecting spur of stiff clay, known as Mower's Point, which the proprietor has for many years protected by laterite revetment work and other measures. The results of this erosion have been that Rangoon's very existence as a port has been seriously threatened. The deep water channel above Rangoon has been diverted year by year further away from the Rangoon foreshore and large sandbanks have formed on the Rangoon side of the river, immediately above the town. The ebb tide swinging around the eroded bend in a deep contracted channel has emerged from it at the projection known as Mower's Point with great force, and the momentum thus given to the water has carried it obliquely across the river to the Rangoon bank, causing erosion of the river bed, and the undermining of the Port Commissioners' wharves and jetties. The anchorage accommodation in a port peculiarly dependent on such has been seriously curtailed by the difficulty of laying many fixed moorings in a tideway subject to strong currents, and the impossibility of laying moorings of any description above Mower's Point. From time to time, since the constitution of the port authority in 1880, various engineers



Rangoon River Training Works: View near end of Wall showing the great width of the base and the building of the superstructure. The end of the wall is in comparatively shallow water and hence the base is visible. On the left of the photograph is the new channel with the Port of Rangoon in the distance and on the right is the old channel now silting up. The works were executed to prevent the river breaking through in the direction of the arrow at the top of the photograph.

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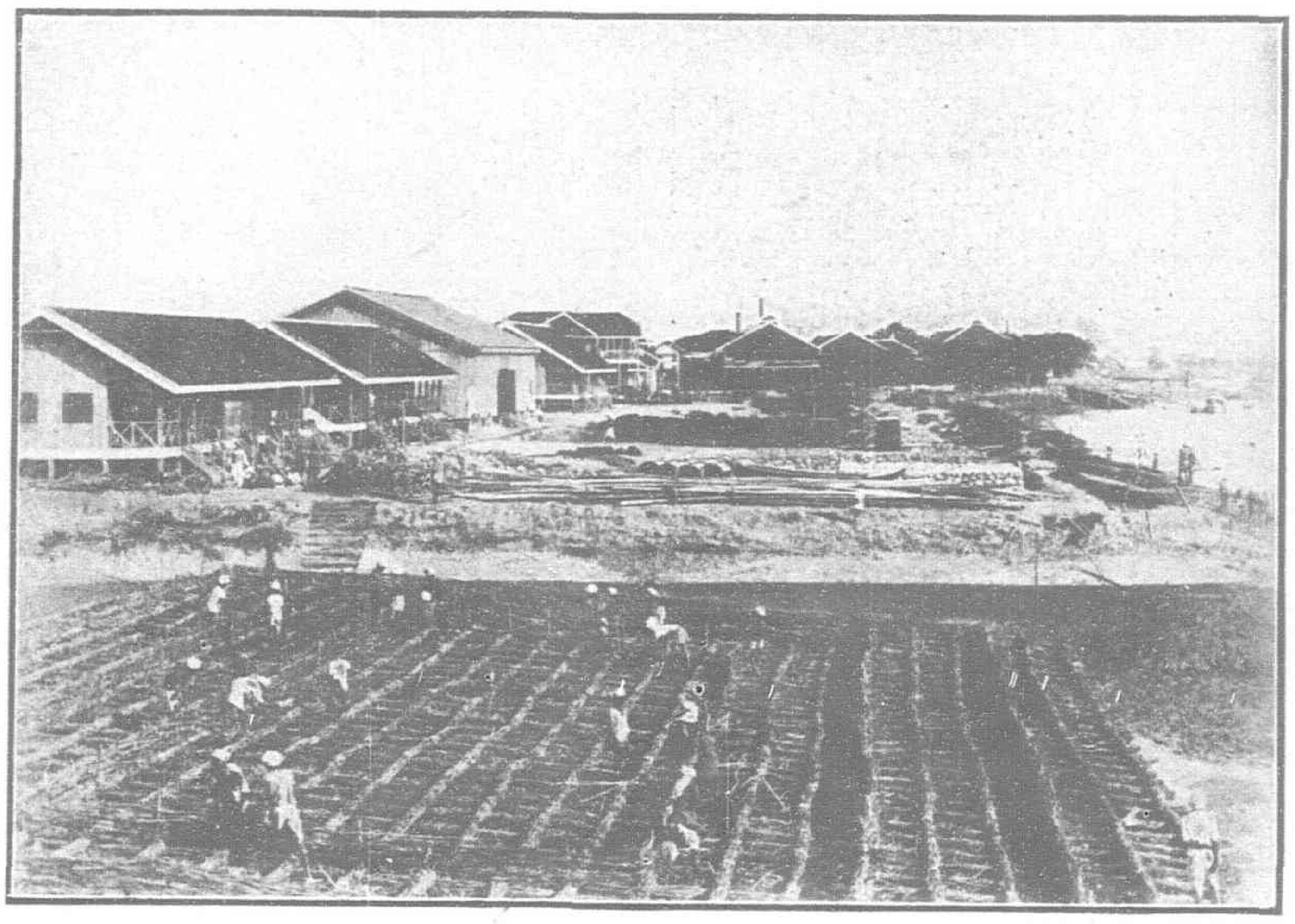
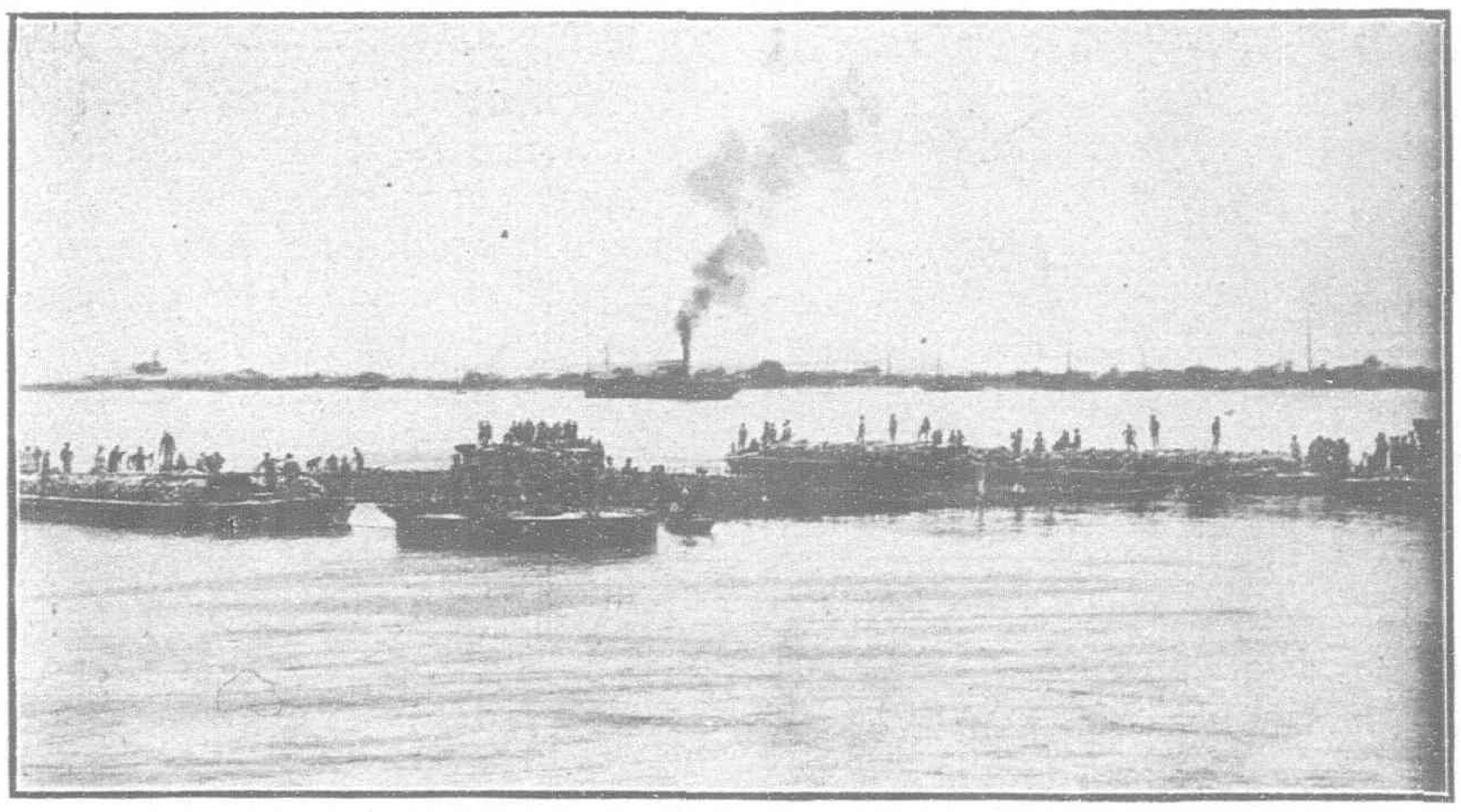
* We reproduce some of these illustrations by courtesy of the *Rangoon Times*.



Mattress on slip ready for launching.

have discussed, in an academic way, projects for bringing the river into train but it was always realized that in a great tidal basin varying from half a mile to a mile wide, situated in an alluvial plain with depths of water up to 80 feet below low water (ordinary spring tides) a 20-foot range of tide and currents on the flood and ebb running 4 to 6 knots per hour, any work carried out with a view to diverting the main channel of the river must necessarily be largely experimental and must present a possibility of failure.

Mr. Buchanan examined the conditions and issued a preliminary report in 1903. Mr. Meik, the well known expert on harbour and river works, accepted his conclusions. Eighteen months were employed in making a complete survey accompanied by tidal observations, and in December 1905 a scheme was prepared and presented to the Port Commissioners. The scheme was supported by the Local Government and in due course reached the Government of India. At their instance a Committee was appointed to consider it, presided over by Sir John Benton, the Inspector-General of Irrigation for India, with whom was associated the late Mr. J. R. Bell, the expert on Indian rivers. The Committee issued its report in 1906. In it the principle of a training wall proposed by Mr. Buchanan was agreed to.



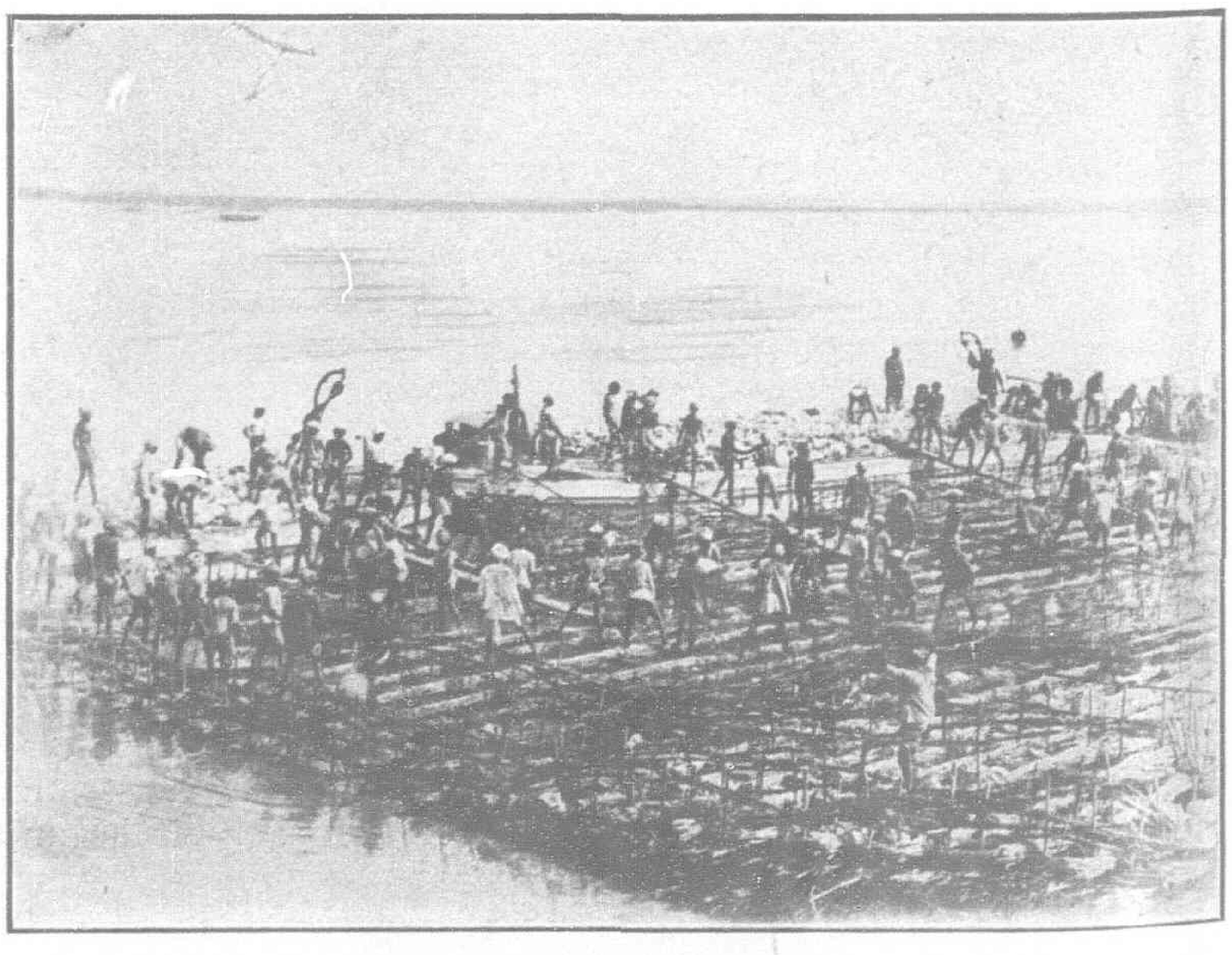
A mattress in position ready to be sunk through 70 feet of water.

The training wall was agreed to by all, but experts differed as to the way in which it should be constructed. Mr. Buchanan had recommended that it should be laid on mattresses. Sir John Benton's Committee recommended that it should be built on a stone or laterite floor. A lengthy discussion ensued which lasted for four years. In the course of it Mr. Buchanan fortified his opinion by a foreign tour in which he studied on the spot the river improvement works of the United States, Canada, and China. But he failed to convince the other side. And so the controversy rolled on, Mr. Buchanan affirming that the work could not be carried on without mattresses, and Sir John Benton as stoutly asserting that they were a positive danger. The contention was in full swing when Sir Harvey Adamson, the Lieutenant Governor, arrived in Burma in 1910, and neither the Government of India nor the Government of Burma in their attempts to attain harmony had succeeded in inducing either of the great protagonists to budge one jot from his originally expressed views.

Meanwhile, pending settlement of the mattress question, sanction to the estimate was being withheld by the Government of India. Sir Harvey Adamson visited the training works, examined the whole project, saw a mattress successfully laid, consulted his own Chief Engineer, and came to the conclusion, for what it was worth, that the work was progressing on proper lines, and that he should trust to Mr. Buchanan, the man on the spot. He represented these views to the Government of India, and urged that there could be no progress until the controversy was brought to a peremptory conclusion. The Government of India accepted his views, and sanctioned the estimate, mattresses and all. Since that time Mr. Buchanan carried out his project without interference, and the results showed conclusively that his tenacity of purpose was justified, and that the decision to adhere to mattresses was right.

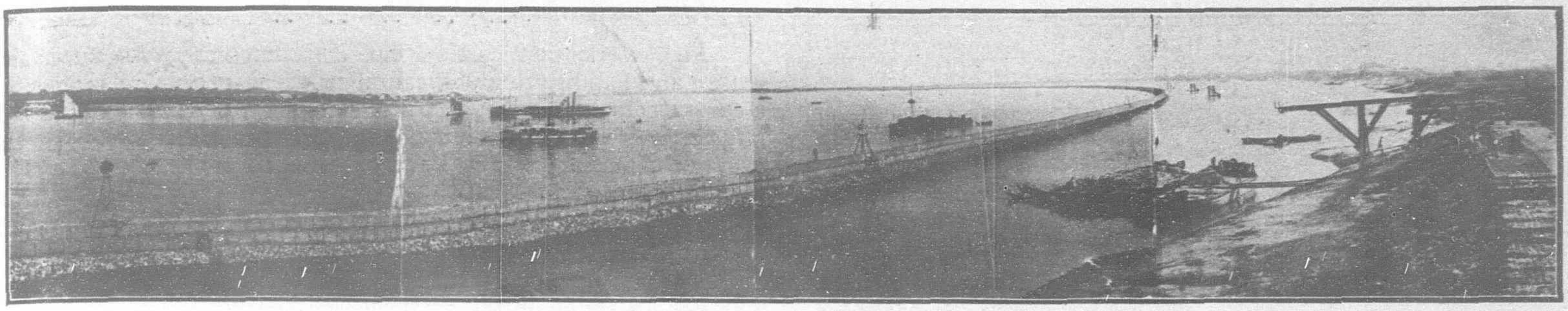
It was in October, 1910, that the approval of the Government of India was received for a wall with mattresses, and an estimate was sanctioned amounting to Rs. 1,34,10,607, subsequently amended in 1912 with the sanction of the Government of India to Rs. 1,50,00,183, or a million pounds sterling. The sanctioned work comprised a training wall 10,000 feet long extending from Seikgyi to within 2,000 feet of Mower's Point, and the dredging of a channel through the shoal in front of the wall. The top of the wall was to be 5 feet above L. W. O. S. T. which coincides approximately to low water of neap tides, it being considered that for the purpose of training the river this height of wall would be sufficient.

As the work progressed unforeseen problems in hydraulics arose, and it was found that effectively to control the river the height of the main wall should be increased and the deep holes scoured by eddies between the end of the wall and Mower's Point filled in to the normal level of the river bed in the vicinity. The height of the finished wall is now 14 feet above L. W. O. S. T. and it is calculated that 99½ per cent. of the river is brought under control, whilst the filling in of the deep holes will induce the stream lines of the flood and ebb tides to flow in parallel lines. The removal of the point itself is a work that will have to be carried out as circumstances permit, and the wall has been aligned with that end in view.



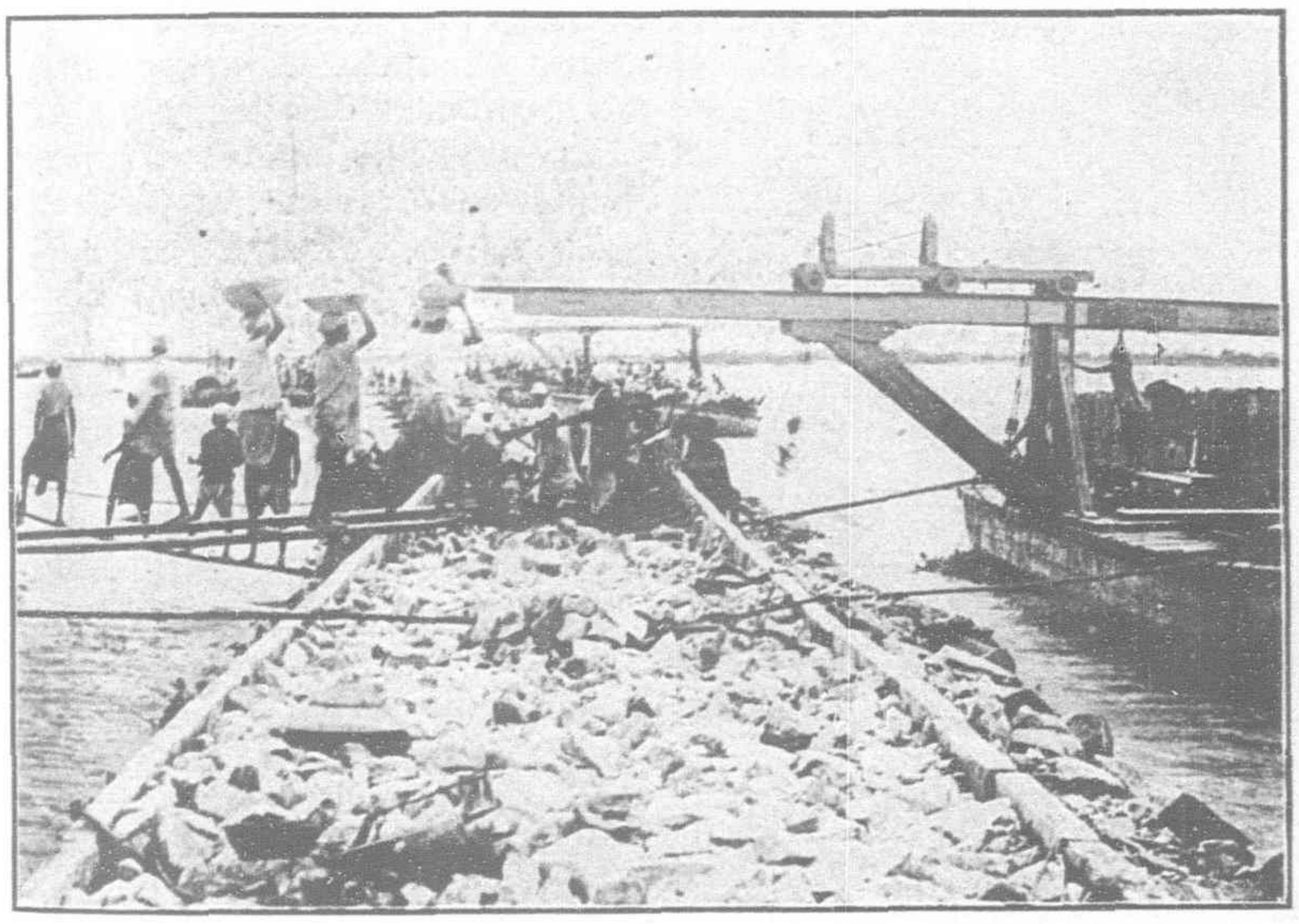
Sinking a mattress.

The wall is constructed of rubble stone dumped from steam hoppers or deposited from barges on a foundation of brushwood mattresses overlaid with rubble uniformly distributed, and the width of the foundation course throughout the wall is 235 feet. Upon the rubble mound is erected the superstructure which is built of reinforced concrete slabs forming the sides of the wall tied together by iron rods and filled in with stone. Of these slabs there are 15,750, and they were manufactured by the Commissioners' workmen at Seikgyi. Brushwood mattresses were used with the idea that by sinking a wide flexible carpet of this material for the whole length of the wall on the top of the soft silt forming the river bed the deposit of evenly distributed layers of stone to form the wall and apron would be facilitated.

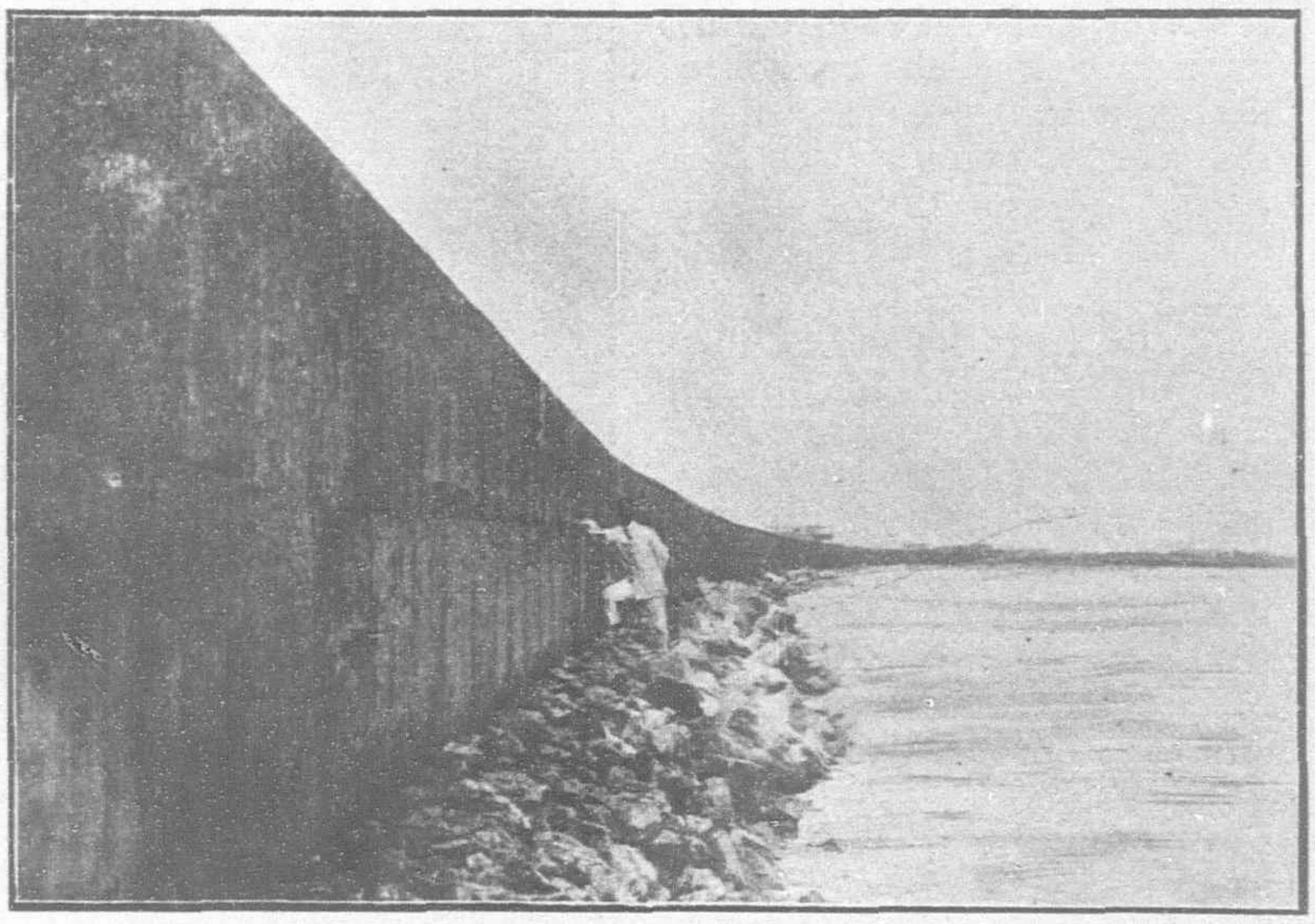


Rangoon River Training Works: View looking down wall. On the left hand is seen the new channel with a stone barge in the foreground.

One and a half millions tons of granite have been used in the work, and the provision of stone of suitable quality and in sufficient quantity has been a leading feature of the project. A large granite quarry was opened out at the uninhabited island of Kalegouk, situated 135 miles from Rangoon in the open sea off the Tenasserim coast, but the task proved a most arduous one and many difficulties arose. The rainfall is between 200 and 260 inches per annum, the island was covered with thick forest and jungle, labour was difficult to obtain, and the sea passage to Rangoon in the monsoon so bad as to be at times dangerous. The output of the quarry was 1,000 tons per day and the stone was conveyed to Rangoon in steam hopper barges each of 1,000 tons capacity, specially built for the purpose.



Construction of Superstructure

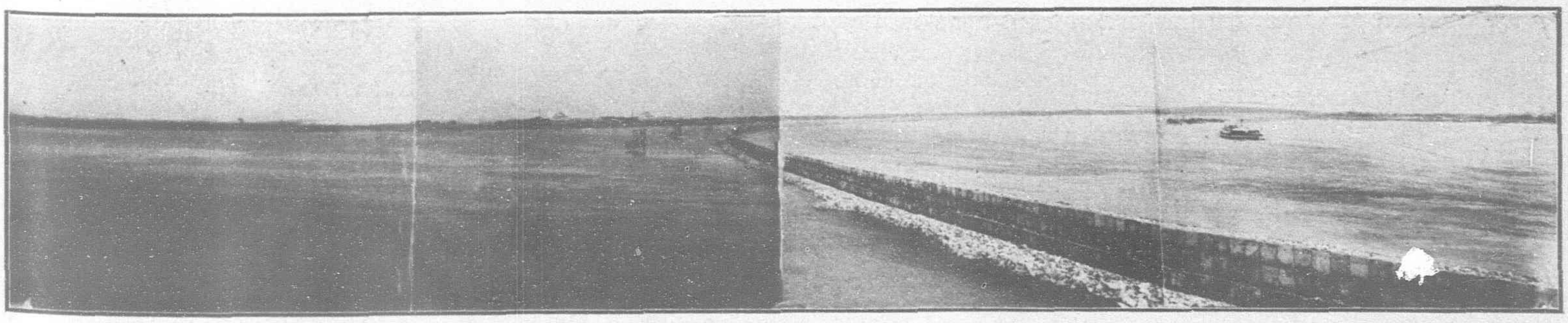


The finished wall showing superstructure above low water.

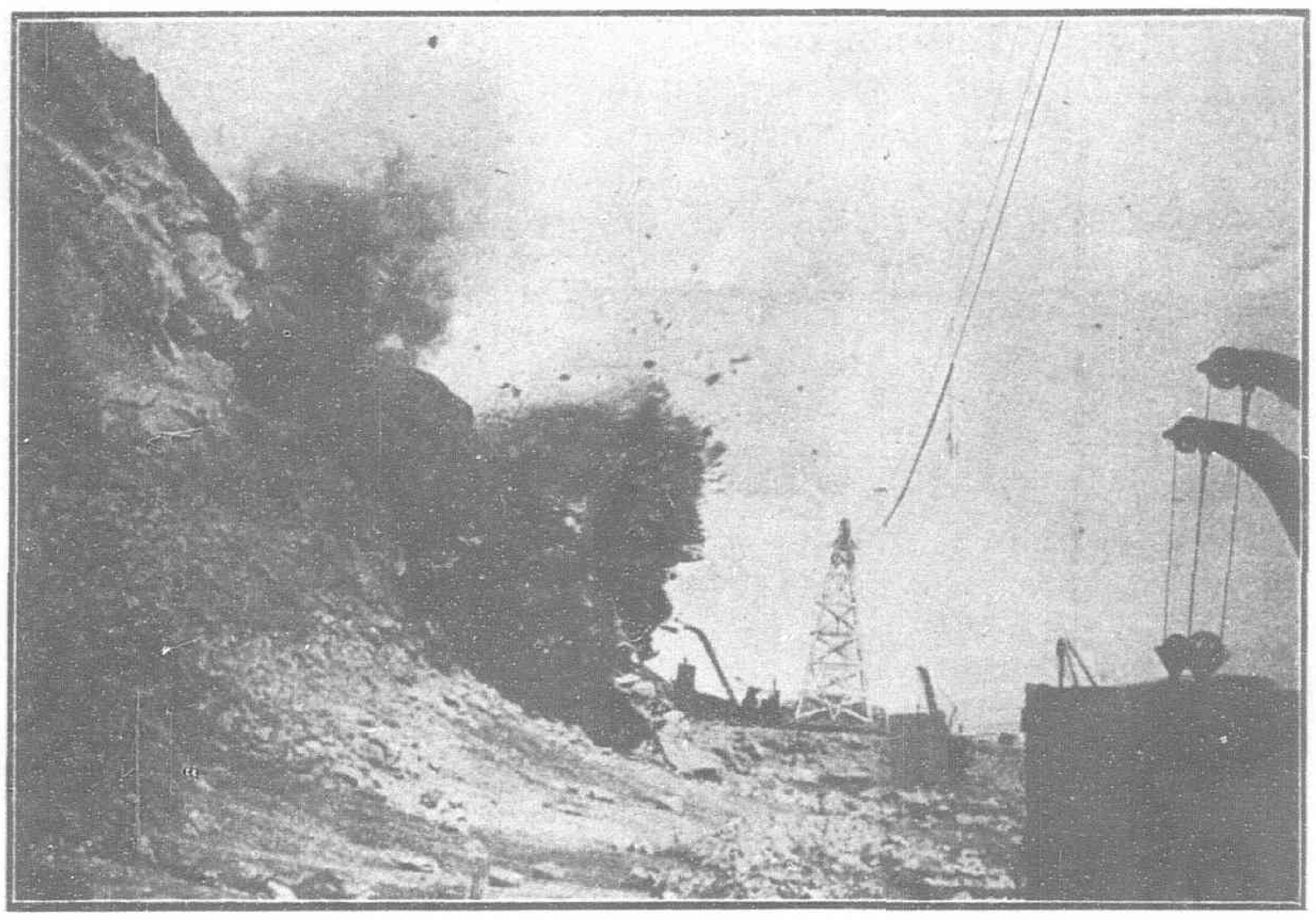
In the manufacture of mattresses 5½ million bundles of brushwood and 53,000 bundles of stakes were used, the material being supplied from all parts of Burma. In all 225 mattresses, each mattress measuring 125 feet long by 75 or 60 feet broad, were laid in depths of water ranging from 30 to 60 feet, and although there were anxious moments the work was accomplished without a single serious mishap.

A subsidiary source of supply for small stone has been a quarry worked by the Commissioners at Zingyaik on the Pegu-Moulmein Railway,—the stone being brought to Rangoon by rail.

The dredging of the shoal in front of the wall has been accomplished by a powerful suction pump dredger capable of lifting 80,000 cubic feet of sand and silt per hour from a depth of 55 feet and of delivering it though a pipe line 3,000 feet long.

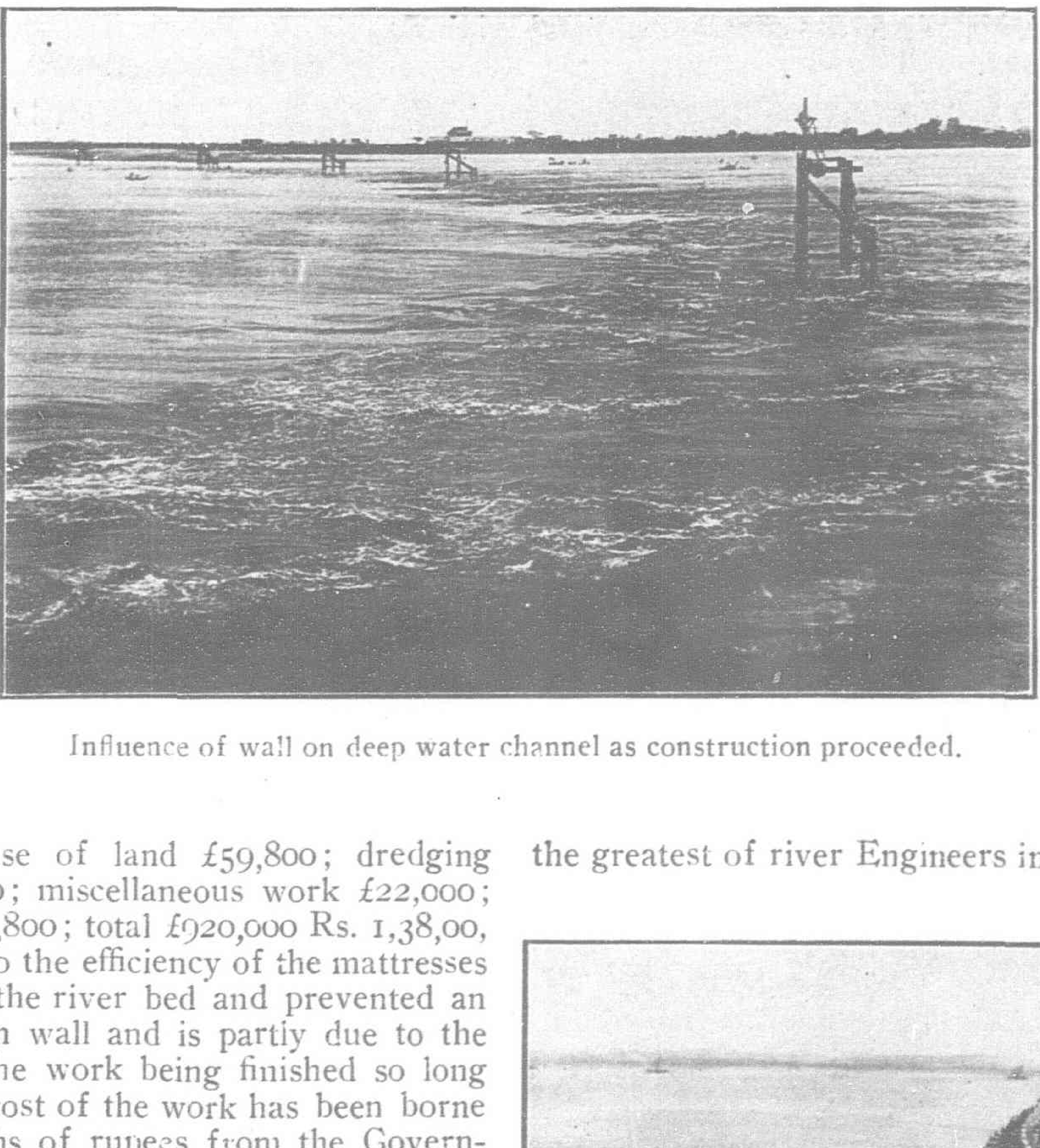


Rangoon River Training Works: A panorama looking upstream taken from about two-thirds of the way down the wall. On the left hand is the old deep water channel now silting up and comprising over 350 acres of land which will ultimately be reclaimed, and on the right is the new deep water channel.



A blast at the stone quarries on the Island of Kalagouk.

The estimated date for the completion of the work was December, 1915, but on two occasions the programme of operations has been accelerated, and the wall is now practically completed 1 year and 9 months before the estimated time. The object of the work has been successfully accomplished, the main channel of the river has been diverted into its new course, the erosion of the right bank has ceased, and the area, amounting to 300 acres, between the wall and the old foreshore is rapidly silting up.



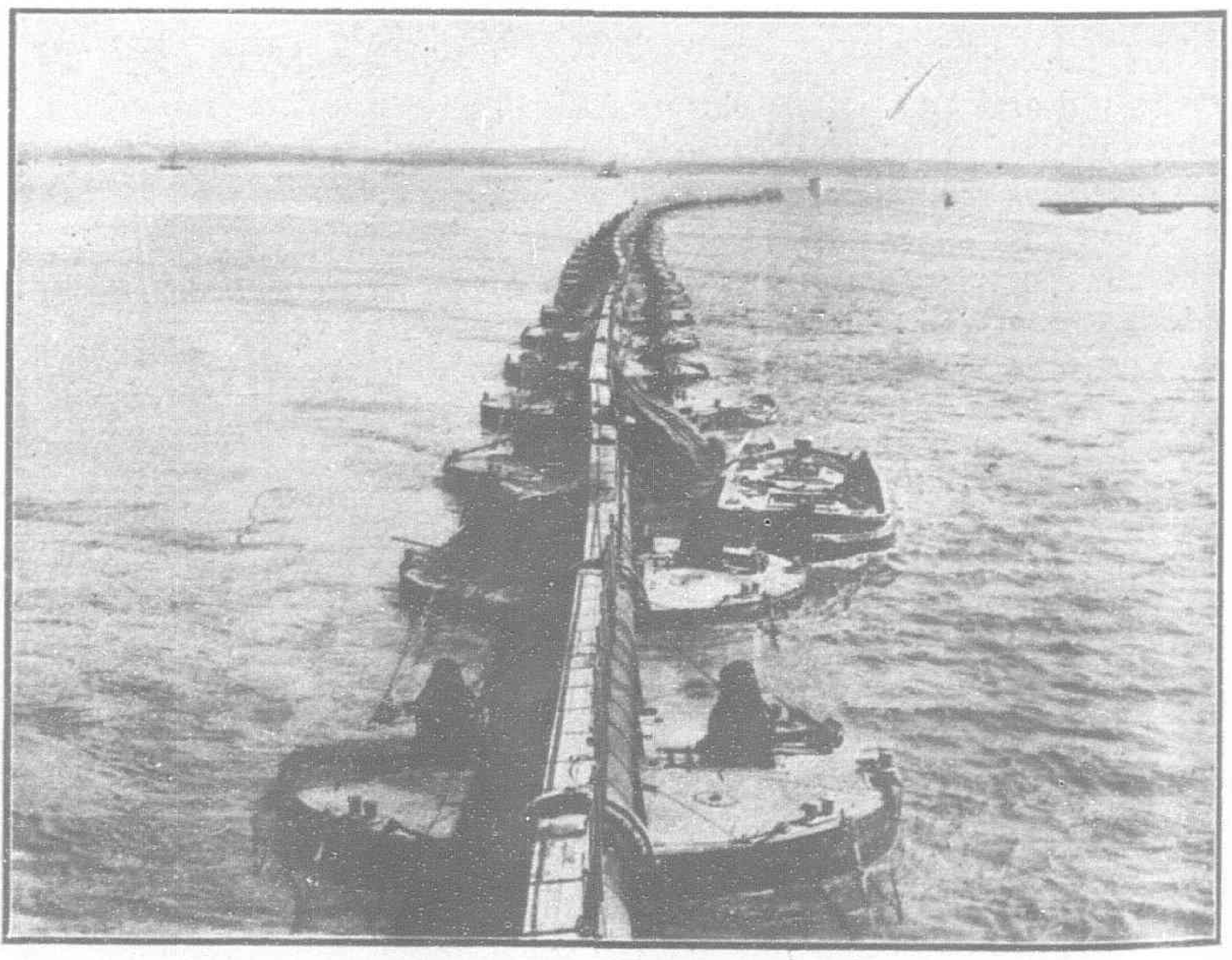
Influence of wall on deep water channel as construction proceeded.

The sanctioned estimate for the work, but for the wall without a superstructure, was Rs. 150 lakhs or £1,000,000; while the actual cost, including superstructure is Rs. 138 lakhs or £920,000 of which the various items are: Mattresses £103,000; dolphins and beacons £10,300; stone £335,800; capital cost of quarries and three steam hopper barges £171,400; equipment, launches, etc., £84,300; purchase of land £59,800; dredging plant £81,300; dredging £23,300; miscellaneous work £22,000; engineering and supervision £28,800; total £920,000 Rs. 1,38,00,000.) The saving is partly due to the efficiency of the mattresses which have become embedded in the river bed and prevented an anticipated settlement of the main wall and is partly due to the saving in establishment due to the work being finished so long before the estimated time. The cost of the work has been borne in part by a free grant of 50 lakhs of rupees from the Government of India which the Port Commissioners gratefully acknowledge, and for the remainder by the raising of Port Trust debenture loans. The work is non-revenue producing and will impose a burden of some 5½ lakhs of rupees per annum on the trade of the port, but the following figures giving the size and rapid growth of the port will shew that almost any expenditure was justifiable under the circumstances, because although experts have differed widely concerning details of construction, there has been no difference of opinion respecting the urgent necessity of the work:—

	1899-1900 Rs.	1912-13 Rs.
Value of block at approximate cost	75,00,000	3,27,54,707
	Tons.	Tons.
Net registered tonnage of shipping entering the Port...	1,457,380	2,862,668
	Rs.	Rs.
Ordinary port revenue from rates, rents and dues	11,79,500	43,93,456
Value of trade in lakhs:—		
(*a*) Imports	913·34	2,361·51
(*b*) Exports	1,423·11	3,075·62

The work was carried out departmentally, its uncertain nature and liability to modification or even suspension rendering a contract impracticable, and it is believed that of its kind it is the largest river training scheme that has been attempted. On an average about 2,500 men have been employed throughout the period of the work.

Towards the end of his address delivered on the occasion of the formal declaration of the completion of the work the Lieutenant-Governor, Sir Harvey. Adamson said:—"In conclusion I may say a word about the prospects of the ultimate success of this work. Projects of river training of such magnitude can rarely be predicated as certain of success. There are so many unknown and unknowable factors in play that in the best laid schemes of this nature there is always a risk of failure. I think that it can safely be said to-day in respect of this work that the bogey of failure is a mere nightmare of the past. The mattresses have fallen and done their work as anticipated. The wall stands firm after having been subjected to the action of the tides for many months. Probing fails to reveal any defect in it. Silting behind the wall is progressing more rapidly than was expected and an area of 300 acres of most valuable land is in process of speedy reclamation. The main channel has been diverted into its new course, the erosion of the right bank has ceased, and the sandbanks above the town are rapidly disappearing. It can therefore be said with practical certainty that the work is firm and staunch and that it has achieved its object. The largest of river training schemes in any country has been successfully completed, and I venture to predict that Mr. Buchanan emerges from this magnificent project with a name which will rank among the greatest of river Engineers in the whole wide world."



Dredger pipe line 3,000 feet long discharging 4,000 tons per hour.

RAILWAY DEVELOPMENT IN SHANTUNG

A correspondent at Hsuchowfu writes to a contemporary as follows:—The chief items of interest in North Kiangsu at present are economic rather than political. It is hardly too much to say that even the great Lung Hai Railroad, stretching from Lanchowfu to tidewater, is eclipsed in importance by the new line to be built from some point west of Tsingtao, via Ichowfu, and terminating at this place.

It may not be clear how such a short line appears of more importance to this part of the province than the line that cuts straight across North China, with its infinite political possibilities: for the wise ones have pointed out that the Lung Hai is but the emergence of a great eastern-bound current that was dammed up effectually at Port Arthur and could not find sufficient space for dischange in the colder port farther north. But it is of far more importance to the short-sighted people that they should get a few commodities a fraction of a cent cheaper to-day than that the vitals of the nation should be helplessly exposed.

Neither may it be clear how the new road from Tsingtao to North Kiangsu can greatly affect prices, for its length will certainly not be very far from the present distance by rail from here to Shanghai, and in addition must be reckoned the very low freight rates on the Shanghai-Nanking Railway with which no line north of the river is likely to compete. But whatever may be the reason the trend of trade towards Tsingtao cannot be denied. It may be mentioned that one commodity has in the last few months established itself as almost a monopoly, although it has to pay freight over two hundred and fifty miles of the Shantung Railway and two hundred miles more over the Tientsin-Pukow line from Tsinan, and we are practically half way between the Yangtse and Tsinan. Shipments of the some commodity were just a little while ago entirely from the south, but they have practically ceased.

It is one of the failings of humanity to exaggerate the importance of one's own town, but making a liberal discount for such civic pride it cannot be denied that the possibilities of development here are tremendous. Already through the junction of the Tientsin-Pukow Railway and the Lung Hai, its importance has been increased by the change in the plans of the above mentioned new line from Tsingtao.

It will be recalled that the first plans made the terminus at the village of Hanchuang, just inside the Shantung border, from which place their trains would run into Hsuchowfu over the Tientsin-Pukow tracks. We understand that these plans have been materially modified and that the route will be direct from here to Ichowfu, which will put 30 miles of the road in the province of Kiangsu. For several years at least this city will be the eastern terminus of the Lung Hai. We hear that the officials of this road hope to have rails laid from Hsuchowfu by September but as they have, at this end of the line, neither rails nor cross ties that hope seems a little premature.

Steady efforts are being made to improve transportation on the Tientsin-Pukow Railway. A foreign traffic inspector is located here and a foreign conductor has been put on one of the regular trains.

An honour has been conferred on Mr. L. P. Ridgway by the Chinese Government in recognition of his services during the rebellion of last year. As District Engineer he had a very trying position as the opposing armies went back and forth over his section of the line inflicting no end of damage. President Yuan has conferred upon him the Chiaho decoration of the seventh class, an honour richly deserved. Mr. Ridgway has been on the railway from the start, stationed first near Pukow, later at Kuchen, where he built one of the important bridges, while now he is in charge of the line from the Shantung border south to Nanhsuchow.

Attention is directed to the new time table for the Tientsin-Pukow Railway which appears in our advertising columns. The express train will leave Tientsin each Saturday at 7.30 p.m. and will arrive at Pukow at 9.04 p.m. on Monday, while from Pukow the express will leave at 9.10 p.m. each Monday night and will reach Tientsin at 10.55 p.m. on Wednesday.

FREIGHT CHARGES IN AMERICA AND JAPAN

WITH LOWER COSTS JAPANESE ROADS GET HIGHER RATES

The American Bureau of Railway News and Statistics has issued the following:

"Although their railways pay the highest wages in the world and must face correspondingly higher prices for materials than are borne by any other transportation system, the American shippers to-day are paying a smaller bill to have freight transported than the shipper in Japan, whose railway, operated by the government, bears nearly, if not quite, the smallest burden in wages or costs of materials in the world. This striking showing of comparative economy is based upon the latest report of the Imperial government railways of Japan. The railroad system paying the highest labor costs of operation in the world, in other words, is selling its commodity, transportation, at a smaller price than is the most cheaply operated system on the globe.

"How little the question of cost burdens the Japanese railways may be learned from the fact that in the fiscal year ended March 31, 1912, it cost only $46 out of every $100 taken in to operate the system. In the corresponding fiscal year American railways paid in operating expenses a few cents under $70 for every $100 earned in gross. The difference in wages alone is almost enough to explain the discrepancy, for whereas American railways yearly pay out in wages more than $44 for every $100 earned, Japan's railways pay only $23, and whereas almost 64 per cent. of all operating expenses on American roads represents wages, less than 51 per cent. represents wages in Japan.

"In the face of this huge advantage the average rate per ton mile charged shippers on Japanese railroads is 0.83 cent against 0.74 cent on our own railroads. Yet the Japanese rate, unlike our own, does not cover terminal service. For this service a charge of 11.3 cents per ton is made, which, added to the road charge gives a total rate of 0.97 cent per ton mile against our own 0.74 cent.

"Although Japan affords a passenger rate of .69 cent per mile against our own 1.98 cent, the difference is almost wiped out by comparison of the traffic, for 95 per cent. of travellers on Japanese railroads are third class; only 4.7 per cent. use second class accommodations and three-tenths of one per cent. use first-class. Whereas this small number of first-class passengers pays 1.60 cents per mile, almost as much as our own, the third-class, in accommodations which would not be tolerated in this country, pays only 0.65 cent, which accounts for the low general average.

"Why the Japanese wage bill is so low may be judged from the fact that the highest paid officials, vice-president and engineer-in-chief, receive $200 a month. The average for officials of the higher grade is $166 per month and for officials of the lower grade $68 per month. Clerks receive an average monthly salary of $21, assistant engineers $26, general employees $9.70 and laborers in regular employ only $7.47. For all employees the average is only $112.50 per year against almost $750 yearly on American roads.

"Another reason why Japanese railroads have kept expenses so low is that immense amounts which on our own railroads must be met by operating expenses, there are charged to capital. The effect is seen in the capitalization figures, for whereas the cost per mile in 1908, just after nationalization, was only $47,759, by 1912 it had risen to $88,104, almost doubling the figures prevailing when the state took over the roads. Japan's railways to-day are capitalized at some $25,000 more per mile than those of the United States, frequently accused of over-capitalization."

The dry dock which is being constructed on Hikoshima, Shimonoseki Straits, by the Mitsu Bishi Company will be completed by November of this year. It will be 350 feet in length, 29 feet in depth, and 56 feet wide at the bottom, says the *Nagasaki Press*.

SCIENTIFIC INVESTIGATION IN THE PHILIPPINES

TWELFTH ANNUAL REPORT OF THE BUREAU OF SCIENCE

The twelfth annual report of the Bureau of Science, Manila, which has just been published covers the year ended June 30, 1913. Mr. Alvin J. Cox, the Acting Director, is to be congratulated upon maintaining the high level of excellence that has always characterized the reports of this Bureau.

Some idea of the usefulness and magnitude of the work being performed by the Bureau may be gleaned from the following extracts from the report:—

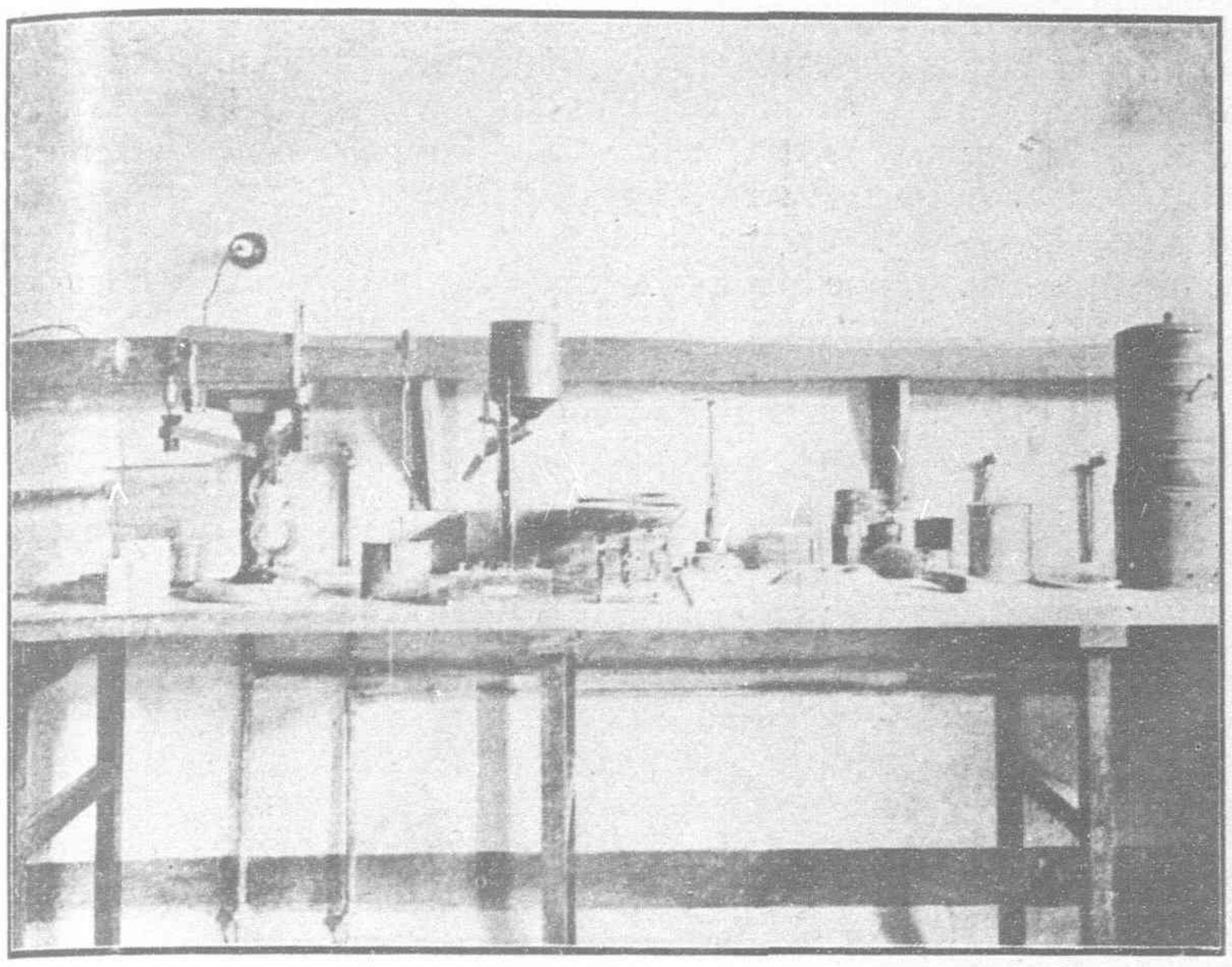
The Bureau of Science was established as the Bureau of Government Laboratories on July 1, 1901, by Act No. 156 of the Philippine Commission, although actual chemical and biological work was first begun on September 25 of the same year when it was started with 6 employees in a rented house on Calle Iris, Manila. The photographic collection, which has developed rapidly and now includes some 15,000 negatives, and other photographic work were begun with the employment of an official photographer on November 16, 1901. Entomological investigations began on December 9, 1902, and with them the foundation of the present entomological collection of specimens. On January 1, 1903, the serum laboratory and the grounds at San Lazaro were transferred to the Bureau from the Board of Health. The section of botany which had been organized in the Bureau of Agriculture and the nucleus of the herbarium were added on July 1, 1903. On November 1, 1905, the Bureau of Mines ceased to exist and became an integral part of the Bureau of Science, and on November 1, 1906, the Ethnological Survey, formerly the Bureau of Non-Christian Tribes, which before that time had been incorporated with the Bureau of Education, was transferred to the Bureau of Science, and, as the division of ethnology, has undertaken the preliminary organization of the Philippine museum and has secured sufficient material to fill three-quarters of the space in the building assigned to it on Calle Juan Luna, one-quarter being reserved for the exhibit of the Bureau of Forestry. The collector of natural history specimens of the Ethnological Survey was transferred directly to the Bureau of Science (then Bureau of Government Laboratories) on November 16, 1904.

The present laboratory building of the Bureau of Science, which was added to in 1911, was first occupied early in the year 1905, and at that time the work was enlarged by the appointment of an engineering force and by the operation of steam and electric machinery. From this small beginning has grown the present power plant which supplies electric current, steam, gas, etc., to the Bureau of Science, the Philippine General Hospital, and the College of Medicine and Surgery.

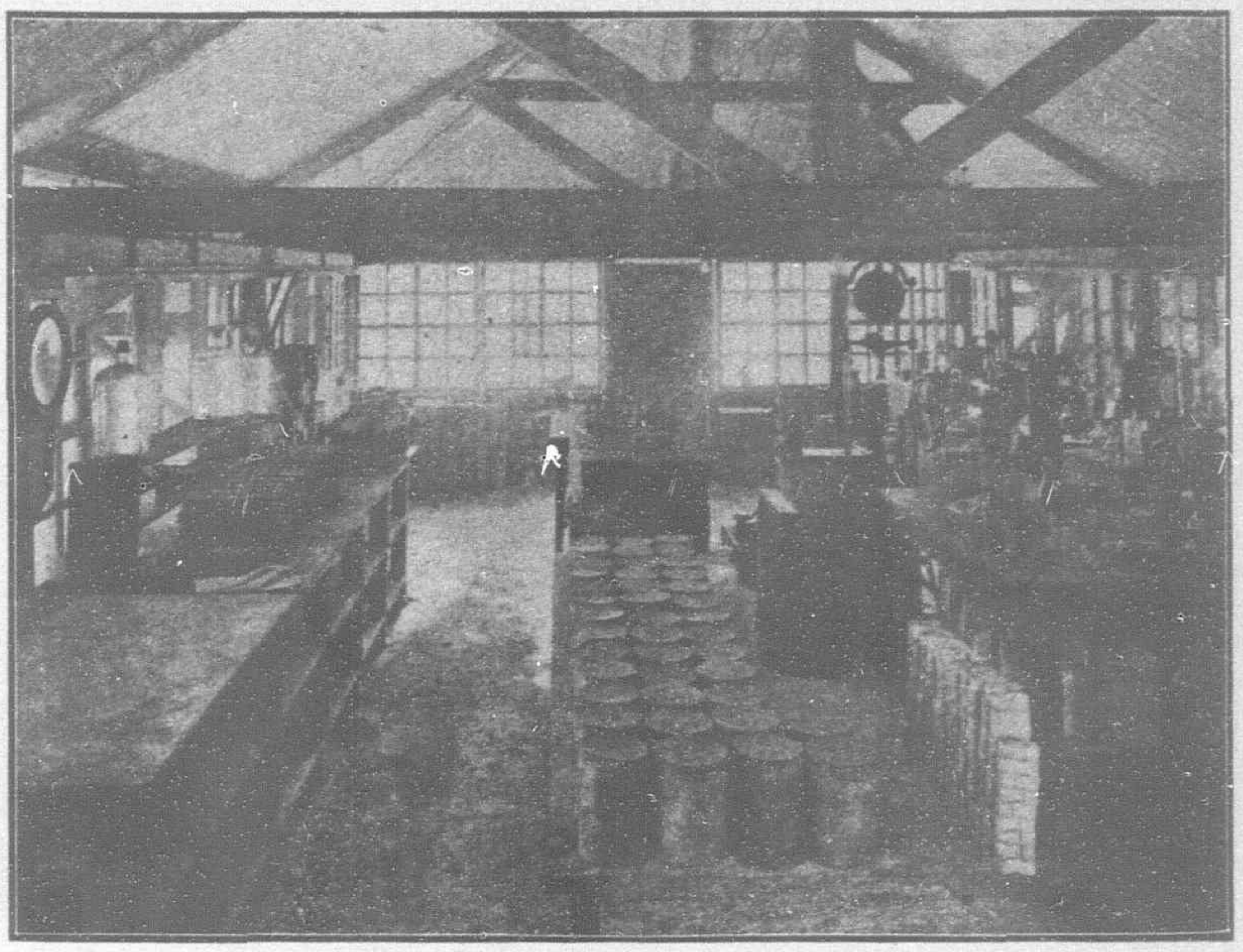
The purchase of books of the library began soon after the organization of the Bureau, and this adjunct of the scientific work grew rapidly, necessitating the gradual enlargement of the force and the organization of the library staff. The original plan contemplated an expenditure of P.90,000 spread over a period of six years for sets of general periodical and other books on chemistry, geology, zoölogy, bacteriology, pathology, physiology, and general sciences. Books purchased with this fund together with the thousands of pesos' worth of publications which were received gratis formed the nucleus of the scientific library of the entire Government. The valuable material received by gift and the continuations of sets purchased from current appropriations have been bound. These, together with the books and serial literature of the clinical principles such as surgery, skin diseases, and ophthalmology, which have been provided by the University of the Philippines, have been placed in the library.

Work made important by the needs of the Islands was from time to time added to the existing divisions. A cement-testing laboratory—including the testing of road materials and of concrete, sand, and gravel used in structural operations—and a laboratory for the examination of foods and drugs were developed within the division of chemistry. The serum laboratory, which at first had undertaken only the preparation of vaccine virus and small quantity of antirinderpest serum, increased its scope so as to cover all sera prophylactics used by the Civil Government. The biological laboratory, which had always been connected closely with the Civil Hospital and had done the general scientific work for the Board of Health,

Main Building, Bureau of Science, Manila.



Bureau of Science cement laboratory in 1906.



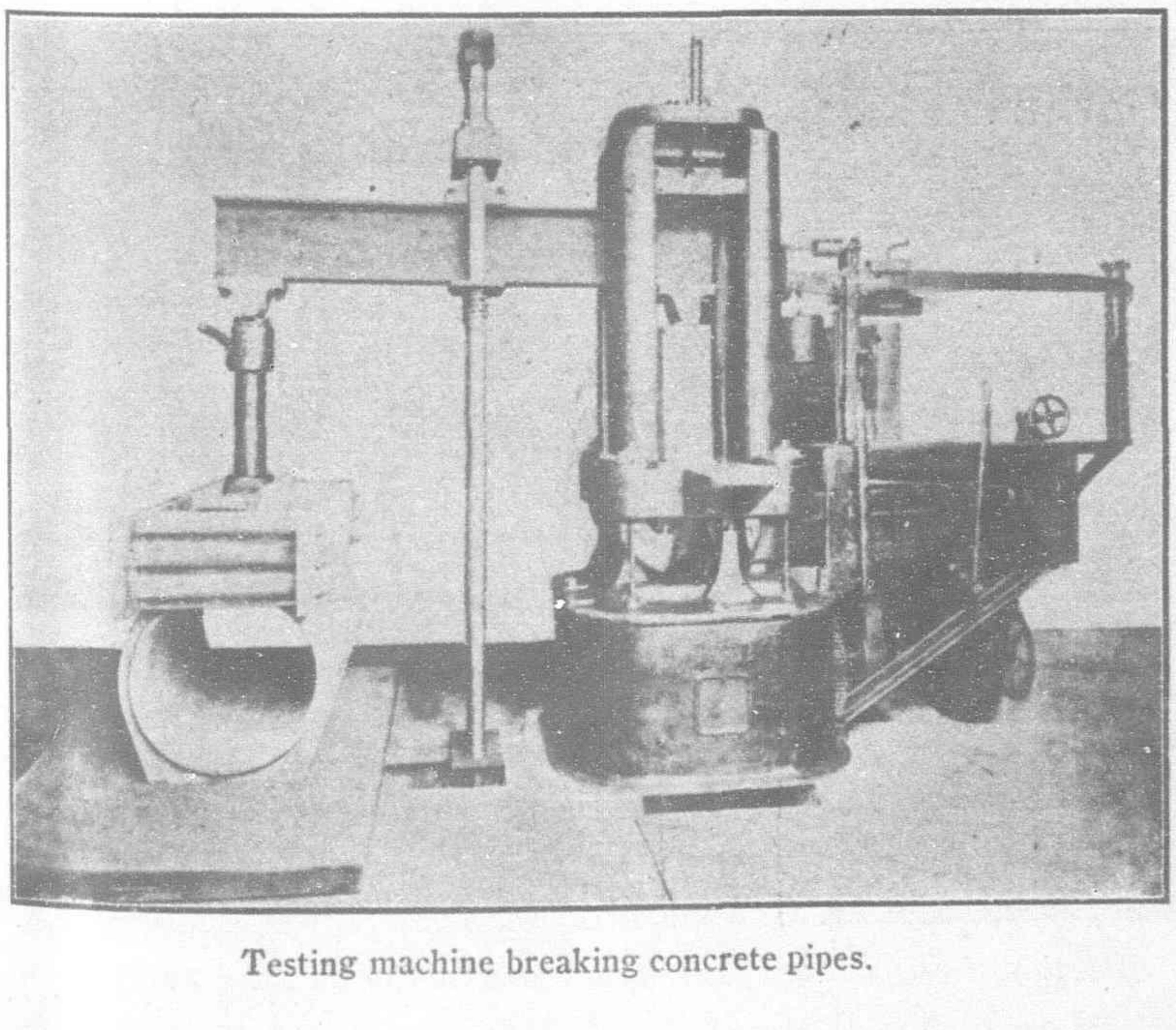
Bureau of Science cement laboratory in 1913.

undertook the diagnostic determinations for Bilibid Prison, for San Lazaro Hospital for contagious diseases, and, at a later date, a fair share of the teaching and hospital work belonging to the Medical School. Investigations in the provinces, bringing with them a more extended study of helminthologic infections, also eventually became necessary in order to give a clear understanding of the general condition of the people. Members of the staff are also in periodic demand by the Bureau of Health in conjunction with the collecting of lepers for the Culion Colony. In 1910 the Philippines Assembly established a Bureau of Science sugar-testing laboratory at Iloilo. On November 9, 1910, funds were transferred to the Bureau of Science by the Governor-General for the building of an aquarium in the bastion immediately in front of Real Gate of the city wall. On June 10, 1913, the aquaria and circulating system had been placed in operating condition by the Bureau of Public Works and were turned over to this Bureau.

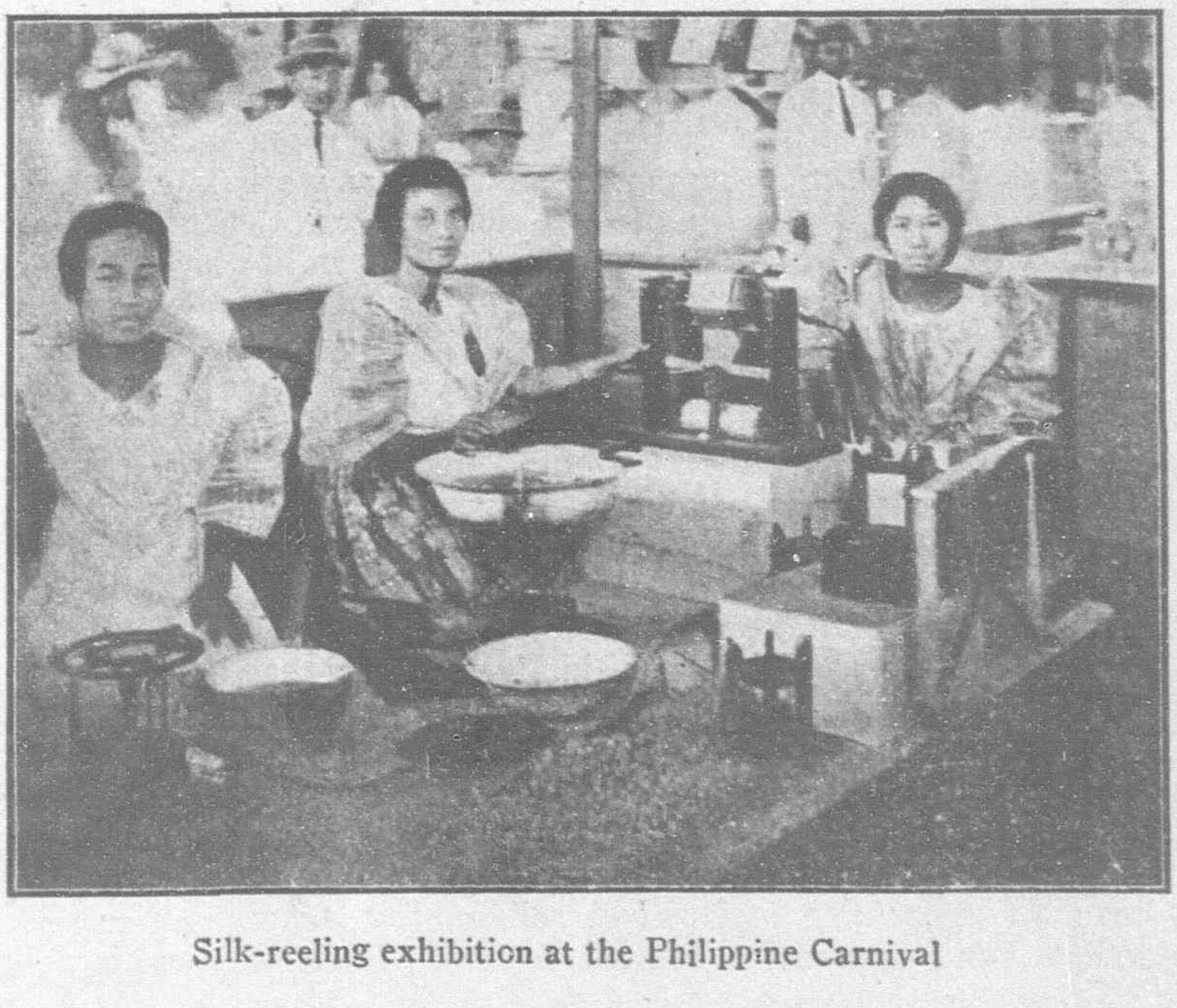
There was one transfer from the Bureau of Science, namely, that of the serum herd to the Bureau of Agriculture on January 1, 1907.

The Bureau of Science now has not only a local but an international reputation built up on the basis of the quality and volume of the scientific work which we have produced. In the course of the address given by those called upon to express His Imperial Majesty's the German Emperor's, views at the foundation of the Kaiser Wilhelm Institute for the prosecution of original research, attention was specially directed to the existence of a number of such institutions in America, and it was very gratifying to us to learn that the Philippine Bureau of Science was referred to as a great institution for investigation established by the Government.

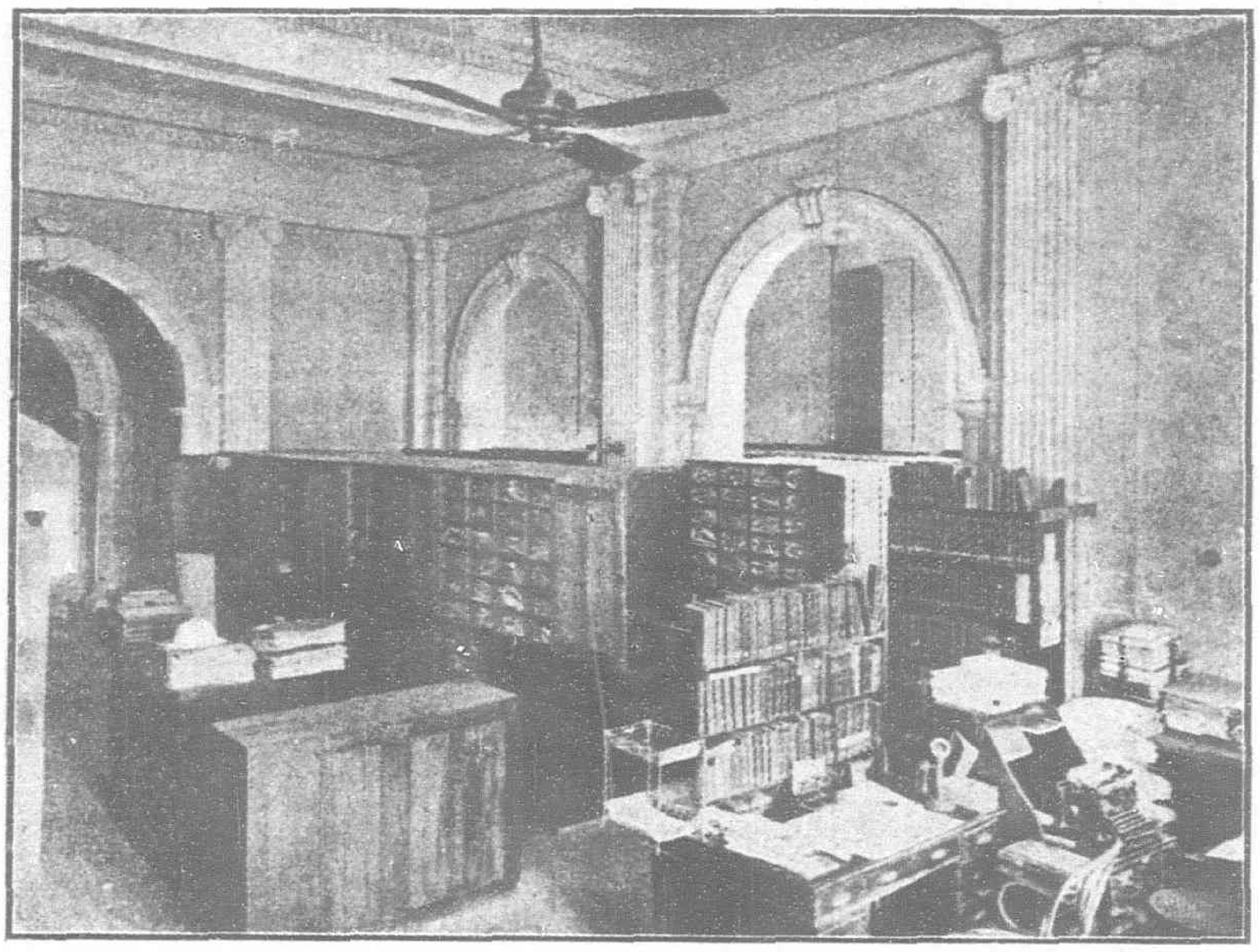
The Bureau of Science performs a large amount of routine scientific work for many branches of the Government and for private parties. They are all benefited thereby, and the greater proportion of the results obtained have a permanent commercial value. In the tenth annual report of this Bureau, attention was called to the fact that in a single day the division of general, inorganic, and physical chemistry had carried on illumination tests of oil; heat insulation experiments; analyses of rocks, limestones and cements, water, soils, fertilizers, coals, and alloys; calorimetric determinations of fuels; standardizations of instruments of precision, of measures and of solutions; as well as physical tests of clays, cements, aggregates, road materials, textiles—such as puttees, khaki cloth, raincoats, and blankets—and of reenforcing iron and of rope. From this, which was done in one division, one can gain an idea of the variety of work carried on in a single day in the entire Bureau with its dozen divisions and sections. The analyses or examinations of samples of a given kind which are performed by the laboratory cannot often be segregated because with few exceptions they must be done promptly without waiting for others to accumulate.



Testing machine breaking concrete pipes.

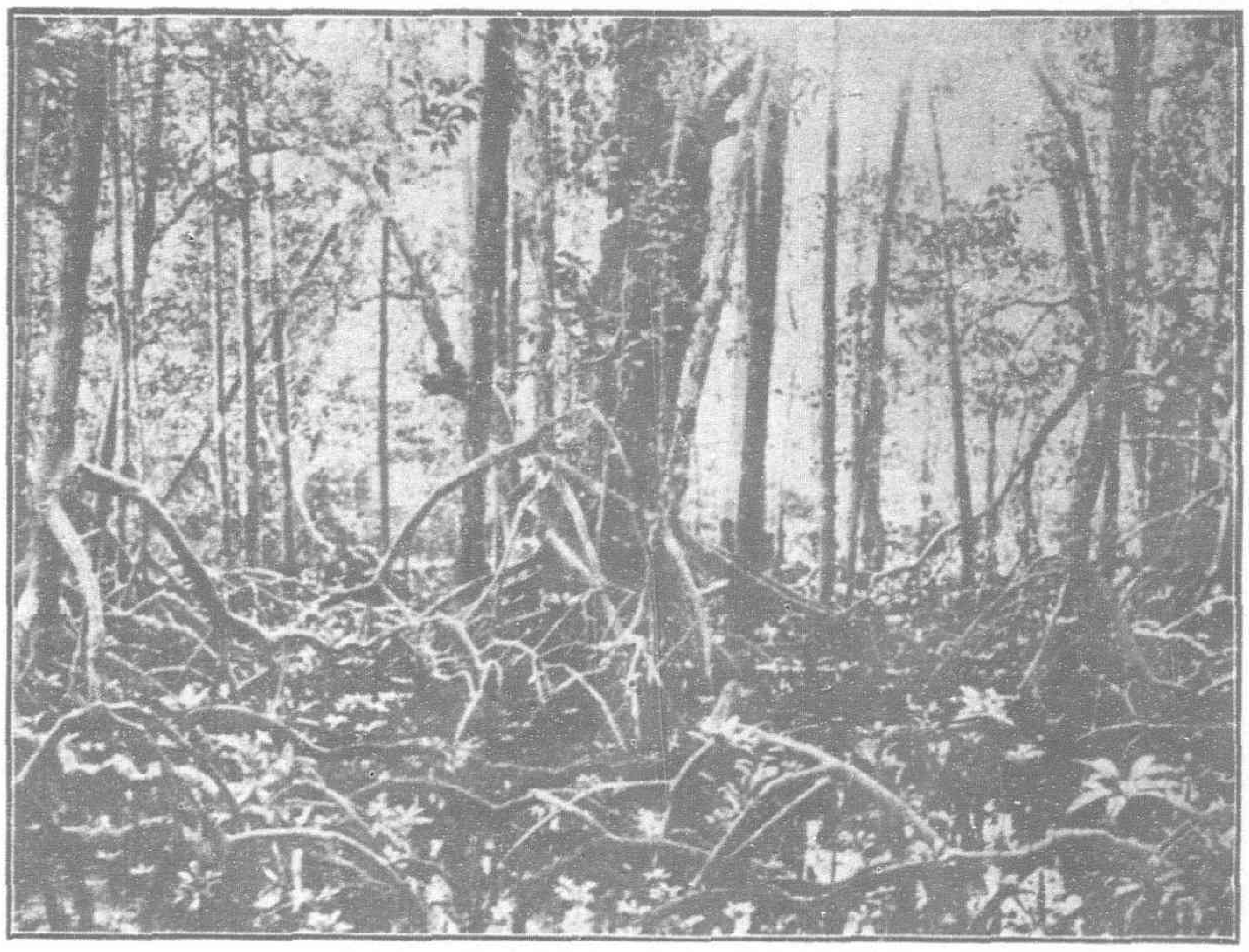


Silk-reeling exhibition at the Philippine Carnival



Interior of Herbarium showing type of cases.

Routine work does not prevent the Bureau from fulfilling its lawful function of conducting independent scientific research and working out the problems of economic importance, provided it be of a legitimate character. By a small nominal charge such as we make in most cases, we are able to exclude unimportant samples submitted out of curiosity and only of momentary interest; without such a charge we would be obliged to devote our entire time to routine work at the sacrifice of all our research work. The schedule of prices on the average does not cover more than the actual cost of routine analyses or examinations, on account of the extreme variety of the work. Certain types of analyses are made gratis exclusively for other branches of the Government, and in these cases it has been necessary only to approximate the cost for statistical purposes so the charges in the schedule may be more or less than the actual cost of the routine analyses or examinations. The charges for unusual and miscellaneous work are too low. The large variety of work makes economy of time difficult; the lack of room makes it imperative to disassemble apparatus as soon as work is completed instead of keeping it set up for similar work, as the space is needed for new work, and the irregularity with which requests are received interferes with the intertwining of suitable problems for research and investigations. The irregularity is partially overcome by enlisting the routine employees as secondary workers on investigations. The cost of performing routine work of a given class varies from time to time, depending upon conditions. In the United States a laboratory often secures a large amount of one class of work and can invariably employ cheap assistance and carry it on empirically. For instance, there are laboratories in the States where they do nothing but analyses of boiler water. In spite of their cheap labor, in almost every case their charges are higher than ours. Where the volume of any given class of work performed by the chemists, bacteriologists, assayers, or other employees is large, we are able greatly to reduce the unit cost and especially are we able to do so when we train and use the services of intelligent apprentices. At the present time we have an apprentice mechanical soil analyst, an apprentice milk analyst, and apprentice cement testers. Each of these is able to carry on a large part of the particular class of work independently and thus save the time of an expensive man. The cost of mechanical analyses of soils has been reduced between 50 and 75 per cent. As an illustration of how the price decreases with quantity, reference may be made to the history of our cement testing. In the fiscal year 1906 we tested fourteen cements; in 1907, one hundred eighty-five; in 1908, one thousand seven hundred nineteen; in 1909, three thousand five hundred ninety-six; in 1910, three thousand two hundred sixty-two; in 1911, three thousand seven hundred twenty-eight; in 1912, seven thousand nine hundred sixty-six; and during 1913 we tested more than nine thousand five hundred samples. In 1906 our authorized charge for cements was P30 per sample; in 1907, P15 per sample; and at the present time it is P0.60 for the same class of test. In the same manner, the cost of analyzing samples of water decreases rapidly when many samples are analyzed at one time. In the decreased cost of work with the increase in volume is to be found the strongest argument for the segregation of the scientific work of the entire Government in one institution like our own. Even when it is all brought together in one class, certain tests are so few in number that the unit cost of performing them becomes very high.

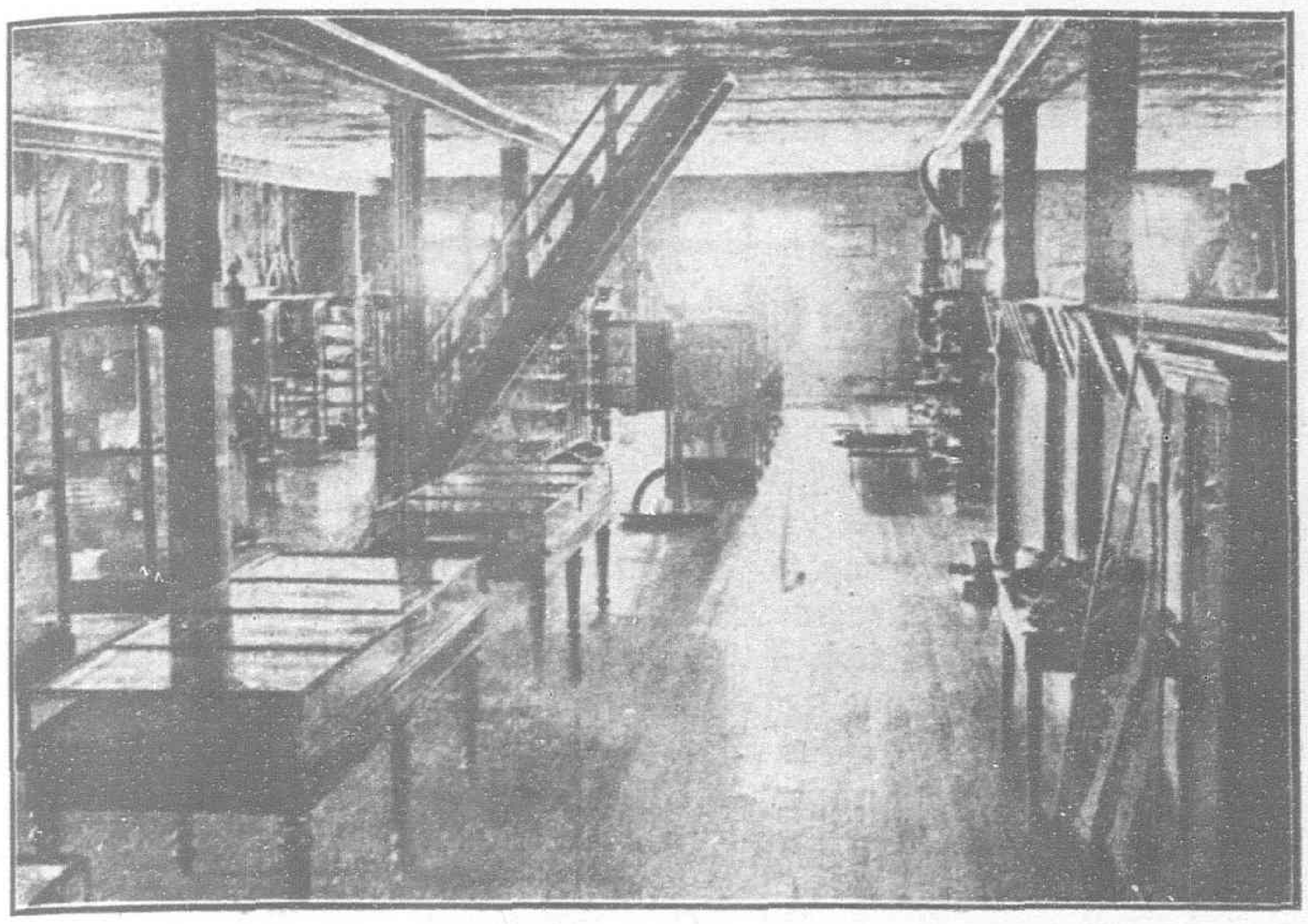


Interior view of a mangrove swamp.

In general, people expect to pay more when work is done by a government laboratory because they have the prestige of the Government back of the results. We have avoided taking advantage of this as shown by the fact that our scheduled charges are consistently very much lower than the charges made by equally reputable commercial and other institutions or laboratories of the United States. Our continued effort is to be of as much assistance as possible, and often we carry work farther than is requested when it is evident that the public can be benefited. For example, sometimes individuals draw conclusions from analyses on the basis of findings in other countries. Often this is erroneous, and we endeavor to settle the problem by careful research.

The results of many of the investigations of the Bureau of Science, although available at present, do not become of most value until they are utilized from an industrial, commercial, or educational standpoint. Research work indicates the latent

Interior of a silk house, showing ant-proof racks for the silkworms.



Second story of museum, looking south from the center.

Second story of museum, looking north from the center.

wealth of the nation, and bears the same relation to the commercial world that blocked-out ore does to a developed mine. The intrinsic value and the potential importance of this work are becoming more and more evident as its practical application is demonstrated and appreciated. It is not always easy to anticipate the needs of the country in order to determine which investigations should be carried on first, and certain problems require years for completion, so that much of the work becomes most useful at a later date. It is in the nature of the case that our work must precede the establishment of large industries and consultations with, and advice to, the public and other branches of the Government requiring scientific knowledge of a specialized character. A large amount of the research of this Bureau has been made available in our publications which to date comprise 20,000 printed pages, 2,000 illustrative plates, and nearly 1,000 text figures.

IRON FOUNDRY FOR TSINGTAO.

Information has been published to the effect that it is intended to establish iron-works in the protectorate of Kiaochow with at first two furnaces. Tsingtao has been chosen as the site of the works in preference to the place of production, Chinglingshen, because the customs duties and exportation conditions are more favourable in the protectorate, and because the Imperial Naval Department have met the company very considerably in regard to granting the necessary land and in the taxation question. The cost of the projected works, which will open an entirely new period for Tsingtao, is estimated at about m. 10,000,000. The Shantung Railway Co. will issue new shares to this amount. The settlement of this matter, and the recently concluded railway contract, it is stated, will mean a most favourable solution of the two most important economic questions of the German protectorate, i.e., the iron and the railway questions.

THE DAIREN HARBOUR WORKS

The reclamation of the shore line at the east of the South Manchuria Railway Co. Experimental Bean Mill at Jijiko was to be completed in May. This is for the storing of inflammable goods.

The reclamation of the area of over 100,000 *tsubo* at the east Quay (Dairen Wharves) is going on in full swing and will be finished during the fiscal year of 1915. This large tract of reclaimed land is intended for the storage of goods in custody of the Wharf Office.

The west side of Main Quay, about 2,000 ft. in length, is being reconstructed with the object of getting deeper berths and vertical facing. The original quay wall constructed by the Russians had steps and offsets in its lower part. When the reconstruction work is done, a tract of land ranging from 8 to 9½ ft. in width will be added for cargo-working. More than two-thirds of the work is already completed, and the remainder will be finished by the end of this year.

The new quay, which is to start at 900 feet west of Main Quay and is to run parallel thereto 1,300 feet outward, is to have its foundation on about 8 feet of stone deposit laid as deep as 38 ft. below low tide. For this purpose the bottom of the water area to be used for constructing the new pier must be dredged to that depth. The new pier will be 400 ft. wide. The shore line intervening between the foot of Main Quay and that of the new quay will be reclaimed and made into the central base as the one lying between Main Quay and East Quay. On the completion of the work, the depth of water on the east side of the new quay, 700 ft. long from the pier head, will be 35 ft., and that on the remainder of the east and on the west side as well as at the northern extremity of the quay 30 ft., whilst in the middle of the new basin the water will be 28 ft. deep, all at low tide. This work is to run four years beginning with the present fiscal year. The plan for the current fiscal year is to reclaim about 3,000 *tsubo* of area near the west foot of Main Quay and to lay concrete blocks along the base line between Main and the Third (new) Quays, as well as the length of 400 ft. on the east side of the new quay.

The depositing of stone on the foundation of Northwest Breakwater was nearly completed during last year. Concrete blocks are being put in their places. The westernmost part is already showing above water. There is only a space of about a thousand feet left open to be connected. The work will be finished during 1916. The progress of the work is seriously hampered by the strong north wind, especially during the colder months.

Work in the concrete block yard of the Harbour Works Office was started in the latter part of April. 2,500 concrete blocks and 24,000 cubic yards of concrete have to be made during the present fiscal year. The daily output amounts to 11 or 12 blocks.—*Manchuria Daily News.*

THE PHILIPPINE CARNIVAL

The next Philippine Carnival will be held in Manila from January 30, to February 7, 1915.

As has always been done in the past, a White Carnival City will be built on Wallace Field, a large park in the center of the City overlooking Manila Bay, and within this "City" will be a magnificent open air ball room, capable of holding three thousand dancing couples and six thousand spectators, an auditorium which will hold eight thousand people, a stadium, shows of all kinds, restaurants and all other forms of amusements which go to make up a first class Carnival.

The principal features of the 1915 Carnival will be nine brilliant International fancy dress balls, three magnificent street Carnival parades, and every evening in the auditorium a thrilling open air play in which five hundred people take part. The Association is also bringing out four new acts from Coney Island, the like of which have never been seen in the Far East.

Manila, according to the Government health reports, has a death rate which compares very favourably with any city in the United States, and at the time of year the Carnival is held the climate is delightful, the nights being very cool while the days are bright, clear and not at all warm.

Arrangements for joining the tram lines of the Chinese Tramway Co. and the French Tramway Co. at Shanghai have been completed and through running was to commence on June 13. The manager of the Chinese Tramway Co. has been invited to proceed to Nanking, where he will be asked to consider plans to build a tram line there.

CHINA'S NEW CONSTITUTION

The adepts at Constitution making have been at it again, and have evolved another provisional instrument for the country to struggle under. In the old Constitution the President had little power, and the Legislative organs had much. This time the President has got his own back, and the Legislature has to earn its power, a position which may be more advantageous to China than the imposition upon her, like a deluge, of systems evolved in highly civilized countries, and absolutely unsuited to her present conditions.

In view of the criticism evoked by the promulgation of the new Constitution it is interesting to know the opinions formed on the matter by such a Constitutional expert as Professor F. J. Goodnow, the Legal Adviser of the Chinese Government, and the President-elect of the Johns Hopkins University. Professor Goodnow does not, as it happens, derive inspiration from any personal prejudice in its favor, for though some of his suggestions have been embodied in it he is not its "father." He is able to regard it from a detached point of view, and he has nothing derogatory to say concerning it. In fact, to put his comments in a nutshell, he is disposed to view it as a workable instrument.

"As I look at it," he says, "it is almost a copy of the Japanese Constitution—making allowance, of course, for the fact that there is no Emperor here. I think that is a point in its favor, however, because the Japanese Constitution, adopted as it was in 1889, has certainly shown itself capable of effective application. Under it Japan has been able to protect herself against foreign aggression and has been able to adopt what she regards as the good things of western life. It is, too, it seems to me, now on the point of making a transition into a fairly popular form of Government if I interpret aright what has recently happened in Japan.

"This is said, of course, upon two assumptions, one being that the articles relating to the election of the President which were passed by the late Parliament as part of a permanent Constitution, still remain in force, and the other being that the Li Fa Yuan, for which provision is made in the Constitution now promulgated, is going to be a legislature organised with members elected by the people, thus becoming a representative body.

"It is true that the powers given to the President by this provisional instrument are very comprehensive. He secures a very large power of ordinance and has practically an absolute veto power. He may thus, through the exercise of his absolute veto power, prevent the legislature from passing laws of which he disapproved, and through his ordinance power he may make the law himself provided that his ordinances are not contrary to existing law.

"But, it would seem to be probable that just so soon as a legislature capable of effective action can be organised that it will be impossible for the President to act in matters of legislation contrary to the clearly expressed wishes of the legislature.

"The Constitution gives the legislature very small control over appropriations, providing as it does that the estimates for army appropriations may not be cancelled or altered except with the approval of the President, and that in case the Budget as a whole cannot be established the Budget of the previous year will be used. At the same time it has to be remembered that the Constitution also provides that the levying of new taxes and changes in the tariff rates and the incurring of loans can only be done as a result of a law—that is, can only be done with the consent of the legislature. As the present taxes are insufficient to defray the expenses of the Government, and will be so for a long time to come, and since these expenses are liable to increase rather than decrease, the legislature has very large power over the money which will get into the Treasury and which can be appropriated. So while this Constitution does frankly emphasise the power of the President rather than the power of the legislature it cannot be said that it makes impossible a development of representative or even Republican government.

"It is to be remembered that this Constitution is not intended as a permanent Constitution but on the contrary has been provided in order to enable China to make safely and with the least friction possible the transition from the past autocratic system to some form of representative government. The provisional Constitution provides for the preparation of a permanent Constitution which shall be submitted to a Citizens Conference for final passage.

"If experience shows that wider powers can safely be vested in the legislature than are given to it by the present revised provisional Constitution it will be an easy matter to make provision in the permanent Constitution for such a legislature."

Professor Goodnow takes a fair and comprehensive view of the instrument as a Constitution for the needs of China to-day, and does not, of course, interest himself in any way with the question of Presidential intentions. Many newspapers and publicists profess to believe that President Yuan Shih-kai has no intention of doing other than declare himself Emperor at no distant date, and if the prophets are right in their contentions then no Constitution is worth the paper upon which it is written, for Yuan Shih-kai as Emperor, would be autocratic. On the other hand the President repeatedly proffers reassurances that he has no intention whatever of doing other than promote Repbulicanism, and if his declarations are honest then there is hope that China will have full and complete representative government as soon as her people demonstrate that they are capable of developing it.

TEXT OF THE REVISED CONSTITUTION

Chapter 1. THE NATION.

Art. 1.—The Republic of China is composed of the people of China.

Art. 2.—The sovereignty of the Republic of China originates from the whole body of the people.

Art. 3.—The territory of the Republic of China continues the same as that of the former Empire.

Chapter 2. THE CITIZENS.

Art. 4.—Citizens of the Republic of China shall be equal before the law, irrespective of race, rank or religion.

Art. 5.—Citizens shall enjoy the following rights:—

(1) No citizen shall be arrested, imprisoned, tried, or punished, except in accordance with statute.

(2) The habitation of any citizen shall not be forcibly entered into or searched, except in accordance with statute.

(3) Within the limits of the statutes citizens shall have the righ to own and enjoy property and to trade freely.

(4) Within the limits of the statutes citizens shall have the rights of freedom of speech, of writing and publication, and of assembly and association.

(5) Within the limits of the statutes citizens shall have the right of secrecy of correspondence.

(6) Within the limits of the statutes citizens shall have the right of abode and of changing the same.

(7) Within the limits of the statutes citizens shall have the right of religious belief.

Art. 6.—In accordance with the provisions of the statutes citizens shall have the right of petitioning the Legislature.

Art. 7.—In accordance with the provisions of the statutes citizens shall have the right to institute proceedings in the Courts of Law.

Art. 8.—In accordance with the provisions of the statutes citizens shall have the right of petitioning administrative officers and of lodging complaints with the Court of Censors and Administrative Justice.

Art. 9.—In accordance with the provisions of law and ordinance citizens shall have the right to attend the examinations for the appointment of officers and to enter the public service.

Art. 10.—In accordance with the provisions of the statutes citizens shall have the right to elect and to be elected.

Art. 11.—In accordance with the provisions of the statutes citizens are subject to the duty of paying taxes.

Art. 12.—In accordance with the provisions of the statutes citizens are subject to the duty of performing military service.

Art. 13.—The provisions made in this Chapter, that are not in conflict with the law, ordinances and discipline of the Army and Navy, shall be applicable to persons belonging to said services.

Chapter 3. THE PRESIDENT.

Art. 14.—The President is the head of the Nation and combines in himself all the powers of government.

Art. 15.—The President shall represent the Republic of China.

Art. 16.—The President shall be responsible to the whole Nation.

Art. 17.—The President shall convoke the Legislature and open, prorogue and close its sessions. The President, with the concurrence of the Council of State, may dissolve the Legislature; in the case of dissolution new members must be elected and the Legislature convoked within six months from the date of dissolution.

Art. 18.—The President may initiate legislation and shall lay the estimates before the Legislature.

Art. 19.—For the promotion of public welfare, for the execution of the statutes, or in pursuance of authority granted by statute, the President may issue or cause to be issued ordinances, but no ordinance shall alter any statute.

Art. 20.—In order to maintain peace and order, or to avert extraordinary calamities, at a time of urgent necessity when the Legislature cannot be convoked, the President, with the concurrence of the Council of State, may issue emergency ordinances having the force of law; but such ordinances shall be submitted to the Legislature for ratification at the beginning of its next session.

Should the said emergency ordinances be rejected by the Legislature, they shall, thereafter, be null and void.

Art. 21.—The President shall prescribe and determine the organisation of all offices and shall issue the regulations fixing the duties of officials.

The President shall appoint and dismiss civil and military officers.

Art. 22.—The President shall declare war and conclude peace.

Art. 23.—The President is the Commander-in-Chief of the Army and Navy, and leads the land and sea forces of the Nation. The President shall determine the organization and the strength of the Army and Navy.

Art. 24.—The President shall receive foreign ambassadors and ministers.

Art. 25.—The President makes treaties, but should articles therein provide for any change of territory, or increase the burdens of the citizens, the concurrence of the Legislature shall be required.

Art. 26.—The President may, in accordance with the provisions of the statute, declare a state of siege.

Art. 27.—The President may confer titles of nobility, rank, orders and other marks of honour.

Art. 28.—The President may grant general amnesty, special pardon, commutation of punishment and restoration of rights. In the case of general amnesty the concurrence of the Legislature shall be required.

Art. 29.—When the President, for any cause, vacates his office or is unable to exercise the powers and functions connected therewith, the Vice-President shall act in his stead.

Chapter 4. LEGISLATURE.

Art. 30.—Statutes shall be enacted by the Legislature composed of members elected by the people.

The organization of the Legislature and the method of the election of its members shall be prescribed and determined by the Constitutional Compact Conference.

Art. 31.—The competence of the Legislature shall be as follows:

(1) To discuss and pass bills.

(2) To discuss and pass the estimates.

(3) To discuss and pass or approve measures relating to the assumption of public debts, and to the contracting of other liabilities to the charge of the National Treasury.

(4) To reply to enquiries addressed to it by the President.

(5) To receive petitions from the people.

(6) To initiate legislation.

(7) To submit to the President suggestions and opinions relating to legislation and other matters.

(8) To raise questions in regard to administration over which doubts have arisen and to request the President to reply thereon. But the President may refuse to reply should he deem it necessary for the matter to be kept in secret.

(9) Should the President make an attempt against the state the Legislature may institute against him impeachment proceedings in the Supreme Court of Justice, if approved by a majority of three-fourths or over, of a quorum of four-fifths or over, of the total number of members of the Legislature.

The exercise of the powers mentioned in clauses 1-8 of this article, and articles 20, 25, 28, 55 and 57, shall require the concurrence of a majority of the members present in the Legislature.

Art. 32.—The annual session of the Legislature shall not exceed four months in duration; but may be prolonged should the President consider it necessary. The President may call an extraordinary session during the recess.

Art. 33.—The deliberations of the Legislature shall be public, but the members may sit behind closed doors at the request of the President, or as a result of the decision of a majority of the members present.

Art. 34.—Bills which have passed the Legislature shall be promulgated and enforced by the President.

But if the President shall disapprove a bill duly passed in the Legislature he may return the bill to the Legislature for re-consideration with a statement of the reasons of his disapproval. Even in case that the former decision of the Legislature be adhered to by a majority of two-thirds or over, of the members present, if the President still maintain that the bill would greatly endanger and harm, either the internal administration, of the state, or its foreign relations, or that there are great and important obstacles in the way of its execution, in such a case the President may, with the concurrence of the Council of State, withhold promulgation.

Art. 35.—The Speaker and the Deputy Speaker of the Legislature shall be elected from and among the members by a majority of the votes cast.

Art. 36.—Members of the Legislature shall not be held responsible outside of the House for their speeches, debates, or for votes cast in the House.

Art. 37.—Except when discovered in the commission of a crime, or when involved in crimes connected with internal or external troubles, no members of the Legislature shall be arrested during the session without the permission of the House.

Art. 38.—The Legislature shall prescribe its own rules and procedure.

Chapter 5. THE ADMINISTRATION

Art. 39.—The President is the chief of the Administration and shall be assisted by one Secretary of State.

Art. 40.—The affairs of Administration shall be separately conducted by the Departments of Foreign Affairs, Interior, Finance, War, Navy, Justice, Education, Agriculture, and Commerce and of Communications.

Art. 41.—The Heads of the Departments shall manage the Administration of their respective Departments in accordance with laws and ordinances.

Art. 42.—The Secretary of State, the Heads of the Departments, and Special Delegates, representing the President, shall be entitled to sit and speak in the Legislature.

Art. 43.—The Secretary of State and the Heads of the Departments, may be impeached by the Censors and judged by the Court of Administrative Justice, should they violate the law.

Chapter 6. THE COURTS OF LAW.

Art. 44.—The Courts of Law shall be composed of the law officers appointed by the President.

The organization of the Court of Law and the qualifications of the law officers shall be determined by statute.

Art. 45.—The Courts of Law, in accordance with the provisions of the statute, shall try and judge, all civil and criminal cases.

But administrative law proceedings and other special law proceedings, shall be tried and judged according to the law governing the same.

Art. 46.—The procedure of impeachment cases in the Supreme Court of Justice, as provided for under clause 9 of article 31, shall be determined separately by statute.

Art. 47.—In the Courts of Law trials shall be conducted and judgment shall be rendered publicly. When, however, it is considered that publicity may be prejudicial to peace and order, or to the maintenance of public morality, secrecy may be observed.

Art. 48.—During his term of office no law officer shall be reduced in salary, nor be transferred to another office, nor shall he be deprived of his office, except as a consequence of punishment according to statute, or of disciplinary measures entailing dismissal.

Chapter 7. THE COUNCIL OF STATE.

Art. 49.—The Council of State, when consulted by the President, shall deliberate upon matters of state.

The organization of the Council of State shall be determined by the Constitutional Compact Conference.

Chapter 8. FINANCE.

Art. 50.—The imposition of new taxes and the modification of the rates of the existing taxes shall be made by statute.

The taxes levied at present shall, unless changed by statute, be collected as in the past.

Art. 51.—The annual receipts and expenditures of the state shall be dealt with in accordance with the provisions of the estimates passed by the Legislature.

Art. 52.—In order to meet special requirements there may be included in the estimates appropriations to continue for a certain number of years as a Continuing Expenditure Fund.

Art. 53.—In order to supply deficiency in the estimates, or to meet requirements unprovided for in the same, a Reserve Fund shall be provided for in the estimates.

Art. 54.—Estimates for the objects of expenditure specified below shall not be rejected or reduced, except with the concurrence of the President:—

(1) Those appertaining to the legal obligations of the Government.

(2) Such necessary expenditure as may have arisen as the effects of the statutes.

(3) Expenditures necessary to carry out treaties.

(4) Expenditures necessary for the organization of the Army and Navy.

Art. 55.—In case of international warfare or internal disturbance, or under extraordinary circumstances, when the Legislature cannot be convoked, the President, with the concurrence of the Council of State, may make urgent financial appropriations.

But he shall request the Legislature for ratification at the beginning of its next session.

Art. 56.—If the new estimates have not been acted upon the appropriations of the previous year shall continue in force. The same procedure shall be observed should the adoption of the estimates be delayed after the fiscal year has already begun.

Art. 57.—The final accounts of the receipts and expenditures of the state shall be audited every year by the Board of Audit, and shall be reported by the President to the Legislature for approval.

Art. 58.—The organization of the Board of Audit shall be determined by the Constitutional Compact Conference.

Chapter 9. THE PROCEDURE FOR DRAFTING THE CONSTITUTION.

Art. 59.—The Constitution of the Republic of China shall be drafted by a Committee established for this purpose.

Members of this Committee shall be composed of ten persons elected by the Council of State.

Art. 60.—The Draft of the Constitution of the Republic of China shall be examined and passed by the Council of State.

Art. 61.—After the Constitution of the Republic of China has been examined and passed by the Council of State it shall be submitted by the President to the National Convention for final adoption.

The organization of the National Convention shall be convoked and dissolved by the President.

Art. 62.—The Constitution of the Republic of China shall be promulgated by the President.

Chapter 10. SUPPLEMENTARY ARTICLES.

Art. 63.—Laws and ordinances in force before the enforcement of the Constitutional Compact, so far as they do not come into conflict with the same, shall continue to be valid.

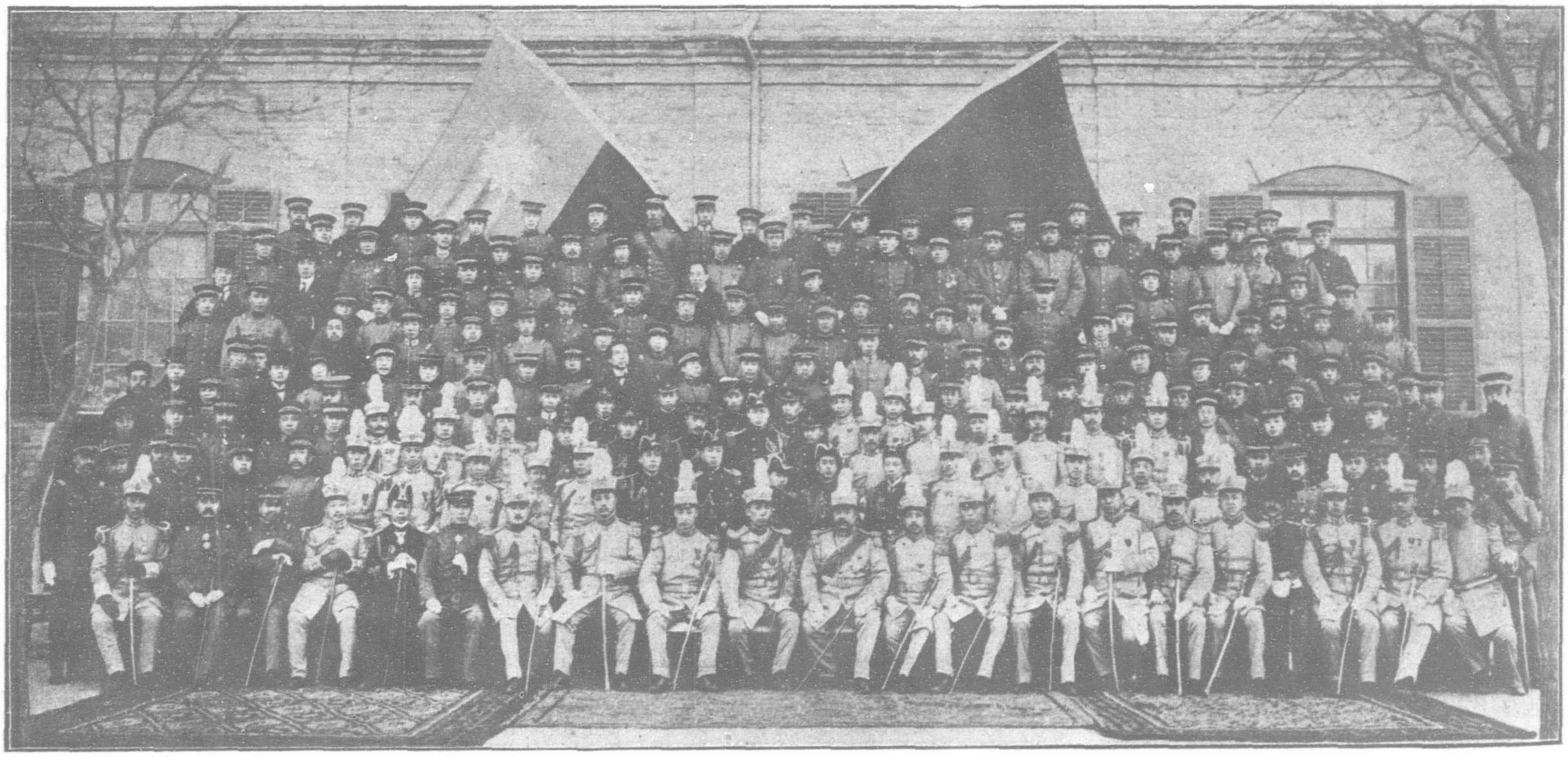
Art. 64.—The Articles proclaimed on the twelfth day of the second month of the first year of the Republic of China, regarding the favourable treatment of the Ta Ching Emperor after his abdication of the Throne, and the special treatment of the Ching Imperial Clan, as well as the special treatment of the Manchus, Mongols, Mohammedans, and Thibetans, shall never be modified.

The statute on the treatment of the Mongols, which is co-related with the foregoing Articles, shall continue to be effective, unless changed by statute.

Art. 65.—On the proposal of a majority of two-thirds or over of the members of the Legislature, or on the proposal of the President, in either case, if approved by a majority of three fourths or over, of a quorum of four-fifths or over, of the total number of members of the Legislature, the President shall convoke the Constitutional Compact Conference to amend the Constitutional Compact.

Art. 66.—Before the Legislature shall have been convoked, its powers and functions shall be assumed and discharged by the Council of State.

Art. 67.—The Constitutional Compact of the Republic of China shall take effect as from the date of promulgation, on which day the Provisional Constitution, proclaimed on the eleventh day of the third month of the first year of the Republic of China, shall become null and void.



The General Staff of the Chinese Army. Vice-President Li Yuan-hung is in the centre of the bottom row.

THE ROBERT DOLLAR LINE

"Harold Dollar" will be the name of the new ocean-going steamer which the Robert Dollar Steamship Company, of San Francisco, has made arrangements to build on the Clyde for service in the lumber carrying trade from ports on the China Coast.

She will be larger than the "Robert Dollar," at present the largest of that fleet, and she will have capacity for handling more than 5,000,000 feet of lumber.

The fleet of the Dollar Line is at present composed of the steamships "Robert Dollar," "Bessie Dollar," "M. S. Dollar," "Stanley Dollar," "Melville Dollar," "Hazel Dollar," "Grace Dollar," and "Mackinaw."

It is the intention of the Dollar Line to use several of these steamers in transporting the greater part of 24,000,000 feet of lumber from Victoria and Vancouver Island, to be used in the construction of the Toronto Harbor Works, and the first of these consignments will go via the Panama Canal immediately after the great waterway is thrown open to ocean traffic. The steamers of the Robert Dollar Line are operated principally in the lumber carrying trade, and the more modern of the fleet are especially equipped for this purpose.

Upon the completion of the "Harold Dollar" she will be the flagship of the fleet. Captain Robert Dollar says the proposed vessel will be built at a cost of about $280,000.

If turned out at San Francisco or any other American yards he declared that the vessel would cost more than $600,000.

The vast difference in favor of the builders in Scotland or England, he holds to be attributable mostly to the higher wages paid mechanics in America.

The "Harold Dollar" will be operated under British registry, with Victoria as her home port, as is the case with other vessels of the fleet.

THE FAR EASTERN REVIEW

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THE HWAI RIVER CONSERVANCY

The news that Lieut. Col. William L. Sibert of the U. S. Army has been appointed to come to China in connection with the Hwai River Conservancy work is extremely important in view of the large sums of money which will be expended if that scheme is proceeded with. Col. Sibert who comes from the Panama Canal with laurels fresh upon him is, next to Col. Goethels, the most eminent engineer in America, and he brings with him a wide knowledge of the highly important science connected with canal and conservancy work. In order that China shall not have imposed upon her a heavy burden for work which may not be profitable to complete, the Red Cross Society has arranged to appropriate the sum of G. $50,000 for the preliminary investigations, and should Col. Sibert be of opinion that it would not be politic to commence reclaiming the flood areas of the Hwai River district the whole of that amount will be borne by the Red Cross Society. On the other hand if Col. Sibert devises a scheme whereby this portion of China may be safeguarded from floods the amount for the preliminary investigation will be borne by the Chinese Government as part of the scheme. Should he report favorably, however, a loan will be floated in America and the well known contracting firm of Messrs. J. G. White & Co. will carry out the scheme devised by Col. Sibert. The Chinese Government are fortunate in having at their disposal so well-known an engineer and so well-known a contracting firm to undertake the onerous task involved in the reclamation of the Hwai River region.

The reputation and experience of Col. Sibert alone stand for superexcellence in engineering. His work on the Panama Canal establishes him as a man of the highest order in the profession. On that great improvement of nature he was in charge of the Atlantic Division, and supervised the construction of the Gatun Locks, the Gatun Dam, the Breakwaters of Colon Harbour and the Excavation of the Channel between the Gatun Locks and the Atlantic Ocean. Col. Sibert is 54 years of age, and graduated as an engineer of the School of Application in 1887; at that time he was assistant engineer on the river work in Kentucky where he remained until 1892, when he became connected with the construction of the ship channel joining the Great Lakes. In 1898 he left that work and became Instructor of Civil Engineering in the Engineering School of Application, subsequently being transferred to the Philippine Islands as Chief Engineer of the 8th Army Corps and Chief Engineer and General Engineer of the Manila and Dagupan Railway. In 1900 he took over charge of the Engineering River and Harbour districts of Louisville and Pittsburg and then became a member of the Isthmian Canal commission, which post has permitted him to do the great work of his career. In China he will be able, perhaps, to add further laurels to his crown.

THE OUTLOOK IN CHINA

Commercial circles in Shanghai still complain of the stagnation of business, but there are numerous indications that all that is now required to initiate an era of prosperity is a better circulation of money. Given adequate banking facilities both the import and export trade may be expected to revive and to increase to a magnitude far beyond anything hitherto experienced. Banking machinery is necessarily fragile, and during the revolution and the subsequent disorder it received many jars which, while not attended by fatal consequences, have necessitated a long period of idleness while the damage was being repaired. Until the financial position of the Central Government gave some indication of improvement it was hardly to be expected that in the provinces there would be a trade revival.

Although it would be incorrect to affirm that the financial position of the Central Government is all that could be desired, it may safely be said that there is a great improvement and that if things continue as they are going there need be no fear of the bankruptcy that last year was thought by many to be impending. It will take careful, cautious and enlightened handling of the situation to place China firmly on her financial feet, but while the prospect of accomplishing this seemed almost hopeless at one time, it now only depends upon the genuineness of the desire expressed by those in high places to tread the path of prudence. The recuperative power of the country is shown by the Customs returns and by the increased revenue from salt dues and other sources. Honest administration for a few years would place China in a position in which she would be independent of foreign financial assistance except for works of a reproductive character. One of the most gratifying signs that matters have greatly improved is the announcement that, instead of borrowing £25,000,000 for reorganization purposes, it is not likely that China will require more than £7,5000,000 during 1914. This sum is required to pay off the numerous short term loans which from every point of view were better wiped off the slate. Situated as China has been, short term loans cannot be met when they fall due, and this means renewal on onerous terms. With all loans of this description finally disposed of China's credit will be greatly strengthened.

All friends of China will hope she will avoid the danger of wearying of good doing. If, now things are showing marked improvement and the outlook is fairer than it has been at any time during the past two years, she were to recommence the bad old practice of obtaining money for unspecified purposes in return for orders for armaments, or by other means which are opposed to sound finance, she would be in a worse position than ever. In times of stress desperate expedients may appear necessary, though they cannot be justified, and bearing this in mind less condemnation has been visited upon China for the indiscreet Belgian Loan of 1912, the Crisp Loan, the Austrian Armament Loans, etc. than may have been inerited. But the present is not a time of stress and it would be simply deplorable if the tender plant of China's credit after putting out a few tentative sprouts were to be nipped by the frost of freebooting finance. That this will not be so is the belief of those who have trust in the Administration as now constituted.

THE SALT GABELLE.

Sir Richard Dane, Co-Director of the Salt Inspectorate, may well be optimistic about the future, in view of the sum of Tls. 24,000,000 having been obtained from the salt collectorates during the year ended May 20. The service of all the loans secured upon the salt revenue only requires the sum of $16,250,000. When the reorganization scheme now being perfected by the Directors of the Salt Inspectorate is in operation, and conditions in the country regain the normal, it may be expected that a much larger revenue will be available. Some idea of the magnitude of the opportunity that is offered to augment the revenue while actually decreasing the burden upon the consumer, is supplied by the announcement by Sir Richard Dane that the salt merchants procure salt at Tongku at a cost of one cash per catty and retail it in Tientsin at 48 cents and in Peking at 58 cents per catty. This statement, which assuredly would not have been made had not Sir Richard Dane been absolutely sure of his figures, shows that, were there no other considerations to be taken into account, it would be greatly to the public advantage were the Government to eliminate the middleman altogether. That would be probably an innovation of too radical a character, but it is obvious that both Government and people have every justification for a demand to share in the harvest hitherto reaped by the merchants.

Some months ago Sir Richard Dane is said to have declared that he saw no reason to suppose that salt in China would not produce a revenue of six million sterling annually. This would seem to be a very conservative estimate. For several months last year the country was in the throes of rebellion, and when the rebels were suppressed bandits in several of the provinces prevented the restoration of order. Moreover the reorganization of the Salt Gabelle can hardly be said to have been begun, as the regulations were only promulgated in February last. Notwithstanding, the revenue for the past year paid into the Quintuple Banks has exceeded three million sterling. The estimate of $77,000,000 for the financial year 1913-14 may quite possibly be realized.

THE CHEFOO RAILWAY AND BREAKWATER PROJECTS

Within recent months much has been said regarding the proposed railway to connect Chefoo with the Hinterland of Shantung Province, and the breakwater to make Chefoo a harbour capable of mooring seagoing steamers and permitting them to embark and discharge cargo in all kinds of weather. Unfortunately the interests of various parties differ in so far as the creation of a port at Chefoo is concerned, and added to that the apparent disregard by the Chinese of their own possessions has obstructed any final plans being arrived at for the proper developments of the port. In so far as the Railway is concerned the *Chefoo Morning Post* recently set out the vicissitudes of the project, summarising them as follows:—

"1.—As a commercial undertaking; route from Chefoo to Weihsien.

The prospectus stated that, owing to the reluctance on the part of the Gentry to give their active support to an enterprise unfamiliar to the interior it was proposed to construct a line first to Hwanghsien with a capital of two million dollars.

The twenty promoters were each to guarantee the sum of fifty thousand dollars, making a total sum of one million, the remaining million being open to subscription by firms of good standing. Upon the enlargement of the capital the line would be extended to Weihsien as the terminus.

2.—Conversion to Government enterprise.

Certain representations were made to the Board of Commerce from time to time, but owing to depression in trade in the beginning of 1910 the promised financial support could no longer be relied upon, and finally in September of the same year at a meeting of the Chinese Chamber of Commerce, it was agreed to prepare a Memorandum to the Governor of Shantung (Mr. Sun Pao-chi) declaring the inability of the Chefoo merchants to finance the proposed Chefoo railway.

Action in this respect appears to have been delayed till May 1911 when the Chinese Chamber of Commerce made a representation to the Taotai praying, owing to adverse circumstances, for the conversion of the project from a commercial enterprise to a Government undertaking. Further progress was arrested by the Revolution in October 1911 and it was not till September, 1912, that consideration of the subject was revived at a public meeting convened by General Chu Tung-feng, the Administrator, when a provisional committee of Ways and Means was formed composed of twenty-six influential members of the Chinese Mercantile community. It was then advocated that the line be constructed from Chefoo to Hwanghsien, thence to a point between Chang-E and Weihsien, and from there on to Te-chow, a point on the Tientsin-Pukow trunk line, as such a route would not interfere with the German Railway in Shantung and would enable Chefoo to communicate with all parts of China and Europe. A summary of the proceedings was communicated by telegraph to Peking and Tsinanfu. A reply was received from Tsinanfu to the effect that the Tutuh and the Provincial Assembly had endorsed the scheme in a telegram to the Board of Communications.

Later, a telegraphic reply was received from the Board of Communications at Peking pointing out that the proposed line from Chefoo to Te-chow would necessitate the bridging of the Yellow River, thus entailing considerable expense, and the Board therefore advised that some other route be carefully considered and reported upon.

In consequence thereof in the early Spring of 1913, a survey of the Chefoo-Weihsien route was made by Chinese engineers. A plan based thereon was submitted to Peking in due course, which brought forth a response in the form of a despatch dated August 1913 to the Chinese Chamber of Commerce at Chefoo wherein the necessity for the construction of the line was admitted and the Government's obligation in this respect was recognised. Consideration, therefore, as a commercial undertaking need no longer be entertained.

3.—Interdependency of Railway and Breakwater.

Matters then remained in abeyance until the formation of the Chefoo Breakwater Commission which accentuated the urgent necessity for the railway enterprise and marked the interdependency of the projects. This situation was so fully recognised that it introduced concerted action on the part of the Chinese and foreign mercantile communities finding expression in memorials to Peking in the latter part of April 1914.

Like Tantalus, who stood up to his neck in water, which fled when he tried to drink of it; and over his head hung fruits which the wind wafted away whenever he tried to grasp them, it is now with infinite relief that we greet the news that as a result of the memorials and the patriotic activity of the Kwan Ch'a Shih, Mr. Wu, the engineer deputed by the Chinese Government to make a survey of the route, actually commenced his start from Weihsien on the 1st May and is expected at Chefoo on or about the 1st of June next."

THE BREAKWATER

In the Spring of last year the Chief Harbour Improvement Commission was formed under authority of the Central Government and the Diplomatic Body and the scheme of surtaxes was arranged which came into force on July 1st last. On October 27th Mr. O. C. V. A. van Lidth de Jude, a Dutch engineer, accompanied by an assistant engineer, Mr. B. van Exter, arrived in Chefoo, having been appointed by the Commission to devise a scheme and draw plans for the improvement of the Harbour.

The Engineer had to keep in mind the necessity for the construction of several wharves, capable of accommodating two or three steamers and connected with the shore by rail, and to provide sufficient deep anchorage for the accommodation of large ocean going steamers. The engineers made a very close study of the port and its requirements. They discovered during the boring operations that the bottom of the harbour was covered with a deposit of mud from 9 to 34 feet deep and this discovery has compelled a revision of the original ideas of cost of the work.

Before the engineers were appointed it was estimated that Tls. 1,500,000 would be sufficient to cover the cost of the work but the extra dredging and other costs arrived at by the engineers brought their calculations of cost to a minimum of Tls. 3,000,000—just double the amount originally arrived at. With this amount the engineers estimate that they will be able to devise a port which will give facilities to shipping sufficient to enable it to hold its own with Dairen or Tsingtau. They propose that the improvement work shall consist of a wall on the east running from near the base of Consular Hill due North and overlapping the end of the other wall running from the West Beach in a north-easterly direction. The Breakwater on the east will be the one encountering the force of heavy seas and therefore will, of necessity, have to be built much stronger than the one running north-east.

The fact that the cost has been doubled has caused a certain amount of perturbation among the advocates of the improvement of the Harbour, but the amount is far from excessive if Chefoo—which is the only purely Chinese port on the coast between Shanghai and Tientsin—is to hold its own with those ports which are in foreign hands and which are its chief competitors.

"THE CHINESE REVIEW"

We have received the first number of "THE CHINESE REVIEW," edited by Mr. J. Wong-Quincey, B.A., and Mr. Chih San-chen. The Review is published monthly in London and the desire of the editors is to give expression to Chinese opinion, from the oriental standpoint on questions of moment and interest. That the new publication will supply a real want is the view expressed by Professor H. A. Giles, Viscount Bryce, the Rev. Lord William Gascoyne Cecil, Professor Jeremiah W. Jenks and others, whose letters of commendation and encouragement are published in the first number. An article by Mr. Wong-Quincey on "The Eclipse of Young China" will be read with interest. He adopts the view that foreign countries can best show their sympathy for China in the crisis through which she is passing by letting her alone. Young China, he points out, made the fatal error of miscalculating the strength of the conservative spirit of the Chinese as a people, a mistake it may be mentioned in passing, that was not made by impartial and unprejudiced foreigners who knew their China. To them it was evident from the first that Young China was going too far and too fast. Mr. Wong-Quincey pays a deserved tribute to the minority, which coupled enthusiasm for reform with recognition of the necessity of bearing in mind the character of the people. In his opinion the question of the constitution is not so important as the creation of a new spirit to elevate the whole nation.

Articles are contributed by Mr. H. Wilson Harris, M.A.; Mr. Ku Hung-ming, M.A,, Mrs. Little and others.

JAPAN IN CHINA

The *London and China Express* of May 8, has the following:—

The Peking correspondent of a London morning contemporary remarks that by obtaining the contract for the Nanking-Hunan Railway and its projected branches, the British not only head off the Japanese—who have been endeavouring to secure the right to construct a railway from Fukien to Changsha, with a branch to the Yangtsze—but insure British control of all railways of real importance in the large triangle whose points are marked by Canton, Hankow, and Shanghai. It is understood that the Japanese Government was plainly told that the British Government would not permit Japanese to build a railway beyond Nanchang, from Fukien. Moreover, the Kiangsu section of the Shanghai-Ningpo Railway, which was mortgaged to Japanese during the Revolution, has been redeemed with capital supplied by the British and Chinese Corporation, and it is regarded as merely a matter of time before the rest of this line comes under British control. British financiers, says the correspondent, may be pardoned for viewing Japanese railway schemes in China unsympathetically. In the first place, though this is always difficult to prove, it can scarcely be doubted that Chinese railways constructed under Japanese supervision and management do not afford fair treatment to the freight of other nations. In the second place, it has not been forgotten that with the loans raised in London for the South Manchurian Railway, the Japanese purchased locomotives and rolling stock from the United States. As Japan cannot undertake the construction, upon a large scale, of any railway in China without recourse to the London market, the British Government, adds the correspondent, can reasonably veto any Japanese railway projects which encroach upon the British spheres of influence. It is noteworthy that in foreign circles the frustration of Japanese railway ambitions in the Yangtsze Valley is generally welcomed.

The longest stretch of railway in the world without a curve is said to be in New Zealand, where there is a distance of 136 miles in a perfectly straight line. This fact is remarkable when it is taken into consideration that New Zealand is one of the most difficult countries in the world for railway construction, as it is very mountainous, necessitating sharp curves and very heavy grades.

In recent experiments on the Pennsylvania Railway it is stated that a twelve-car steel train nearly 1000 tons in weight, running 60 miles an hour, was stopped within its own length of about 1000ft. by means of a development of the Westinghouse brake. Besides improvements in the brake mechanism, two shoes are employed for each wheel instead of one, as at present. The new apparatus shortens the time of obtaining the maximum brake capacity from eight seconds in the present system to three and a-half seconds. With electric control, the time is shortened to two and a-quarter seconds. It is also stated that a twelve-car steel train running 80 miles an hour could be stopped within 2000ft.

THE LUNG-TSING-U-HAI RAILWAY

A RUMORED CHANGE OF PLANS

Considerable interest has been taken in the progress being made in connection with the Lung-Tsing-U-Hai Railway, the Agreement for which was signed on September 24, 1912.* By the terms of this Agreement the Compagnie Générale de Chemins de Fer et de Tramways en Chine was to survey and construct a line which would connect Lanchow-fu, the capital of Kansuh, with a seaport to the north of the Yangtsze. It was generally understood that the seaport was to be Haichow. Previous investigations, however, had shown that it would only be possible to transform Haichow into an efficient port by the expenditure of an immense sum of money. The Compagnie Générale appears to have recognised that the project of carrying the line to Haichow had little to commend it and they are reported to have requested that the terminus of the line should be, instead, at Tungchow on the Yangtsze. It was hardly likely, in view of the fact that this deviation would involve severe competition with the southern section of the Tientsin-Pukow line, that the request would be allowed to pass without protest. The British Minister at Peking is said to have protested formally against the proposed deviation, and there the matter has rested.

A correspondent of the *North-China Daily News*, writing from Hsuchowfu on May 22, makes some interesting statements. He says:—

Those who have followed the developments of railway construction for the past few months will be intensely interested in the report, in which considerable confidence can be placed, that the Lung-Hai engineers, who started east from Hsuchowfu some weeks ago following the survey of several years ago, have been recalled. When it is considered that the plans as understood by the public generally were to push the Lung-Hai straight through to the sea at once, the above report will give rise to many questions.

As the only ones who really know are not likely to impart any information on the subject we are left to the use of our eyes, and the reader is also invited to "look see." It is difficult to avoid the conclusion that British and German influence have given the Lung-Hai plans a serous setback, though it is by no means evident it has been accomplished by joining hands. Looking at it from the standpoint of a disinterested bystander, if the Yangtze Valley's being a British sphere of influence means anything at all, Britain cannot possibly acquiesce in the Lung-Hai reaching tidewater anywhere along the River. Hence the terminus of the Lung-Hai has never been definitely announced, it being the common view that if shut off from the Yangtze it would swing to the north and emerge at Haichow. Granted that such had been determined upon, the move of the Germans becomes as plain as day.

It will be recalled that the plans as previonsly announced called for a road from Tsingtao (Kaomi) running due southwest and terminating at Hanchuang, a small hamlet just across the border of Kiangsu and Shantung, putting the whole line in the latter province. The decision announced some time ago in these columns to run the line straight through from Ichowfu to Hsuchowfu, putting about thirty miles in Kiangsu, is evidently the primary cause of the stoppage of the Lung-Hai work to the east. For with a direct line from here to Tsingtao which is already splendidly equipped for handling both exports and imports the line to Haichow is doomed to certain commercial failure. If the interests behind the Lung-Hai are prepared to go down deep into their pockets and draw out the millions of pounds necessary to make Haichow a formidable competitor of either Tsingtao or Shanghai, let them, but there will be a long wait for dividends. Meanwhile the German softly sayeth "Others have laboured, etc."

If the above is a correct guess at the situation, what does it mean for the ambitious Lung-Hai plans?

Anyone deeply interested in the welfare of China will upon mature deliberation very likely come to the conclusion that it is for her best interest that the Lung-Hai should not proceed further eastward than Hsuchowfu. Apart from political possibilities which have been abundantly commented upon elsewhere, the road is an almost incredibly stupid conception, if the Chinese Government has any voice in the railroads whatever. The only competitor it would have is the T. P. R., also a government railway. This brand new road with its spendid construction can handle all the traffic southwards that this generation is likely to see. To build another practically alongside of it is to cripple permanently the revenues of both. The success of the road even from Honanfu to Hsuchowfu, is doubtful as a commercial proposition. If China is able to demand it she should insist that all traffic originating on the Lung-Hai should be carried to its southern destination by the T. P. R.

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*The text of this Agreement was published in the FAR EASTERN REVIEW of January, 1913.

OSAKA COTTON TRADE CRISIS

The increase of spindles lately undertaken in Osaka has resulted in an over-production of yarn and this is believed to be the principal cause of the collapse of the yarn market. Yarn merchants and others interested in this business are now going through a painful ordeal, and the consequences are widespread. The coarse yarns of the Kanegafuchi mills have declined to Y100, which is Y3 below the previous lowest rate during the reaction after the activity following the war. The collapse of the coarse yarn market has affected the finer and gassed yarns, and some qualities have suffered a heavy decline of over Y30 on the rate ruling about a month ago. The collapse of the market has struck the yarn merchants a heavy blow, and in Tokyo and Nagoya the failure of one or two is already reported, says the "Japan Chronicle." No failure has so far been reported in Osaka, but disquieting rumours are current, and yarn business is being much interfered with. Business for forward delivery on long terms is entirely suspended, and the greatest precaution is being exercised in business, which is now confined to merchants of the first rank. The difficulty in which the yarn merchants of Osaka find themselves is much accentuated by the precautions taken by banks in dealing with them, and also by the notice given by customers in the interior of the cancellations of orders. They are now placed in the disagreeable position of having to bear the entire loss resulting from the decline in the market. Should a further occur, not a few yarn merchants in Osaka will be forced to go into liquidation.

PETROLEUM IN BURMA

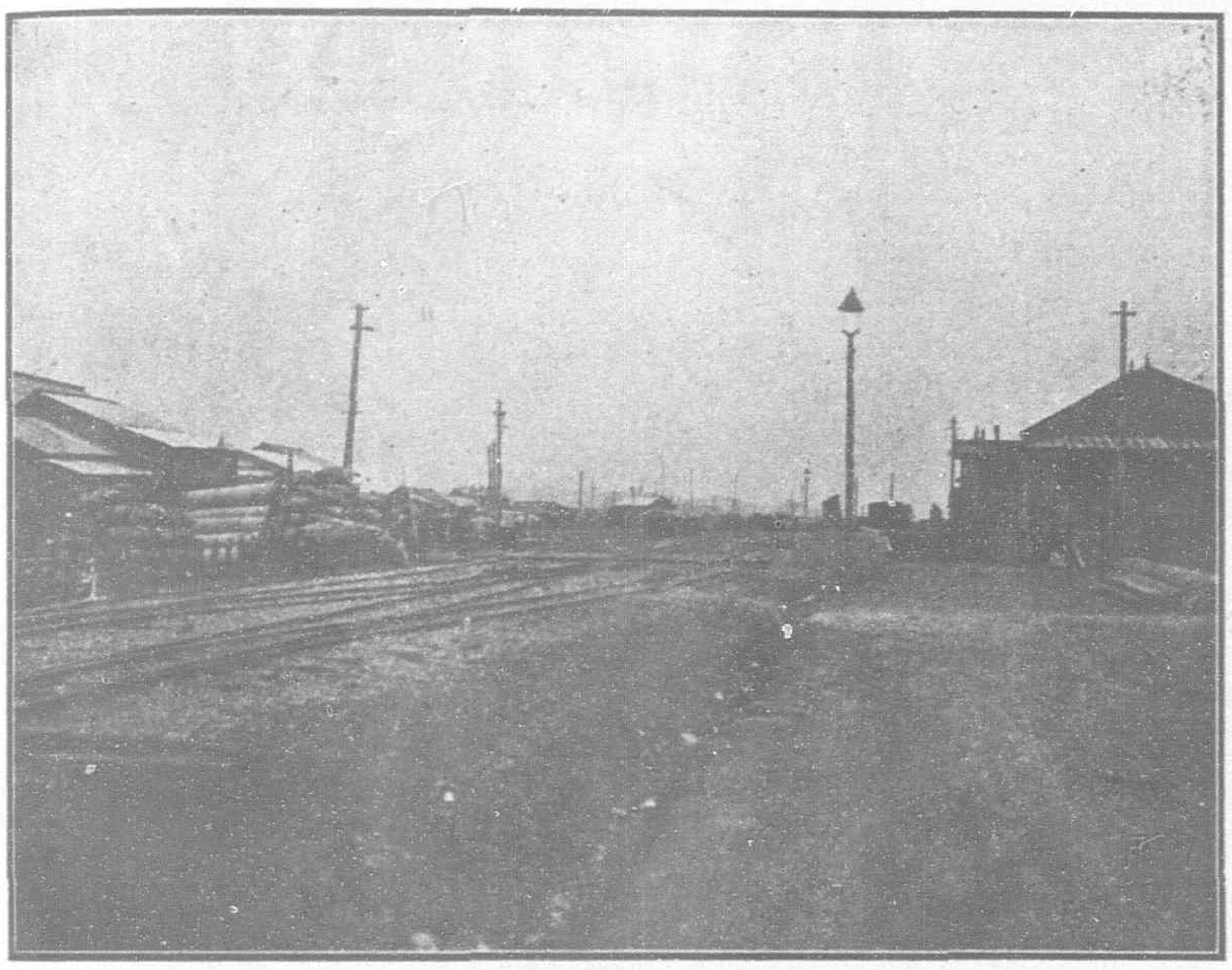
The Indo-Burma Petroleum Co., which has been drilling for petroleum in the upper Chindwin district at Indaw, Kindat Township, has struck oil in three wells. One well is said to have been a "gusher" of 2,000 barrels a day. This is an entirely new field in a wild, sparsely inhabited district. The company is planning to construct a pipe line from Indaw in an easterly direction to the Mu Valley, then turning south along the railway to Myinumu on the Irrawaddy River, not far from Sagaing, opposite Mandalay. The length of the pipe line will be about 170 miles. American pipe will probably be used. Three or four experienced pipe-line men will be needed to act as foremen over gangs of coolies, and one general pipe superintendent will also be wanted. The active development of oil fields in Burma is shown in the fact that the production increased from 116,000,000 gallons in 1904 to 240,500,000 gallons in 1912.

TRADE OF SOUTH MANCHURIAN PORTS

Some interesting facts and figures in regard to the trade of Antung and Newchwang are given in a recently issued number of *Daily Consular and Trade Reports*. Mr. Edwin L. Neville, American Consul at Antung, contributes the report dealing with that port, and therefrom we take the following extracts:—

ANTUNG

The summer of 1913 was an extremely dry one in this district. The extent of the drought is shown by the fact that there was not enough water in the Yalu River to float down the timber that had been cut along the upper river and its tributaries, and the local sawmill was compelled to suspend operations, owing to lack of raw material.



The Railway Station at Antung.

The small rainfall also affected the agricultural community to a very considerable extent. The soya bean crop, one of the mainstays of the district, was very poor. Of the 15 bean mills in Antung 13 were in operation, and many of these only intermittently. There was so much distress in the country that the local Chinese officials were led to take the extreme course of prohibiting the export of grain from certain districts.

Business men and bankers in Antung are authority for the statement that local conditions are the poorest for many years. Building operations are suspended and there are many unoccupied houses and business places. Merchants are complaining that they have much stock on hand which they are unable to dispose of. Unquestionably there is much distress among all classes of the population. Fortunately the winter was unusually mild, or the poorer classes might have been subjected to much real hardship. It is expected that with the return of spring the business situation will become easier. An Italian firm has opened a branch office here in the belief that the present stagnant condition of trade is only temporary.

TREND OF FOREIGN TRADE

Despite apparent adverse local business conditions the trade of the port of Antung showed a considerable relative increase in both imports and exports during 1913. The total net value of merchandise passing through the Chinese Maritime Customs amounted to $10,821,724.

INCREASED TRAFFIC BY RAIL

The revenue of the port increased from $191,916 to $276,115. A noticeable feature of the trade is the rapid increase in rail-borne traffic via the Chosen railways. The value of shipments by rail from July to December, 1912, was $1,019,598, and for the same period in 1913 the value was $3,633,045. Just how much of this increase is due to the reduction of duties on rail-borne goods it is of course difficult to estimate. The figures show, however, that the rate of increase from month to month has not been greater in 1913 than during 1912, and that the traffic in December, 1912, was actually greater than in June, 1913.

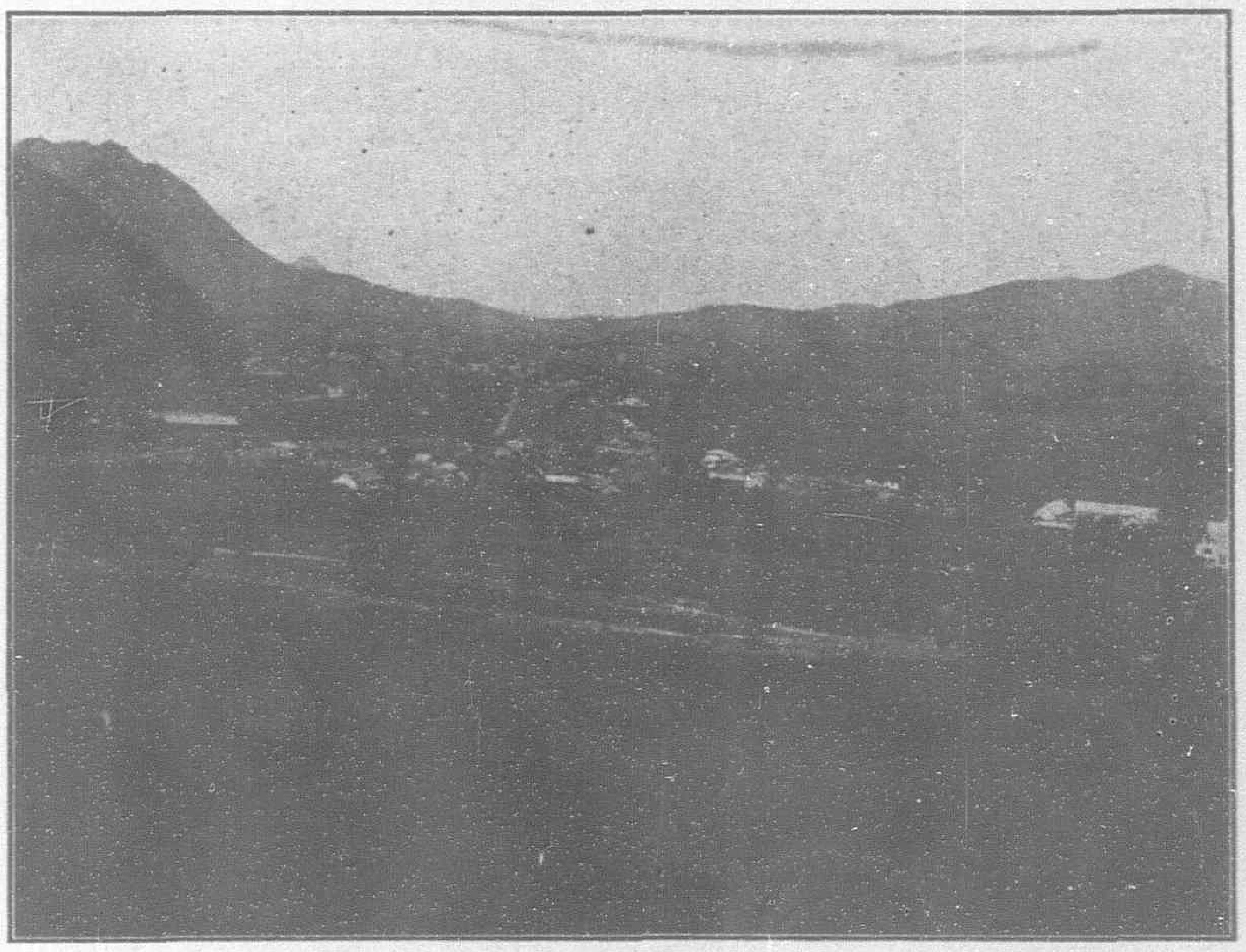
Through traffic arrangements have been completed between the South Manchuria Railway and the Government railways in Japan and Chosen. The South Manchuria Railway has also made its freight tariff on most goods the same between Antung and interior Manchurian points and Dairen and interior Manchurian points.

The statistics here given cover only cargo passing through the Maritime Customs. Figures from the so-called native customs are not obtainable. This is unfortunate, as there is a considerable junk traffic between Antung and points in Chosen and along the coast and the Leased Territory of Kwantung. Efforts are being made to merge the native with the Maritime Customs, but as yet nothing has been definitely settled.

Negotiations are also in progress relating to through traffic in bond by rail from Chosen to the Russian frontier in northern Manchuria. Just what effect such an arrangement would have upon trade in Manchuria is problematic. Still, any increase in railway traffic would call for larger railway equipment.

TRADE WITH THE UNITED STATES

There were no exports invoiced at this consulate to the United States. There were no direct imports from the United States, and the only American product the importation of which increased during the year was kerosene, which was brought in to the extent of 468,982 gallons in 1912, against 673,680 gallons in 1913. Other American imports were negligible.



View of Tsaohokou; a town located midway between Mukden and Antung.

In the future the export of Yalu timber is likely to affect the sales of American soft woods. The export of planks rose from 3,057,146 feet in 1912 to 6,305,744 feet in 1913; this, too, in the face of a scarcity of timber, which was held up by low water. The policy of the timber bureau is to lay in reserve supplies, and it was by drawing on these reserves that a great wood famine was averted in 1913.

TRADE OF TATUNGKOW

The total net value of the trade of Tatungkow in 1913 amounted to only $62,967, against $250,708 in 1912, and the revenue ($1,251) did not pay the expenses of the customs office. The principal imports through the Maritime Customs in 1913 were: Matches, 1,600 gross; American kerosene, 20,960 gallons; Sumatra kerosene, 31,400 gallons; sugar, all kinds, 406 piculs; cigarettes, 17 piculs; paper, 294 piculs; sheetings, 120 pieces. The principal exports were: Bean cake, 13,623 piculs; beans, 9,676 piculs; corn, 188 piculs; wild silk cocoons, 871 piculs.

NEWCHWANG

Vice Consul George F. Bickford of Newchwang reports:—A further decline in the trade of Newchwang took place in 1913, but the decrease, contrary to general expectations, was not so marked as that recorded in 1912. The total value of Newchwang's trade for the two years, stated in United States currency, seems to indicate an increase in 1913 over 1912, but when the difference in the exchange rates of the haikwan tael is taken into consideration it will be seen that, as expressed in taels, the net trade really, did decrease, the figures being 50,385,326 taels for 1912 and 50,064,454 taels for 1913, a loss of 320,872 taels. This decrease is small, however, as compared with that of 7,697,205 taels in 1912. The decrease was confined to the imports, the exports showing some increase.

UNFAVORABLE FACTORS IN TRADE

One of the causes of the decline in trade is the disorganized and unstable currency used in Newchwang and its tributary markets. The value of the transfer tael, an imaginary unit of 53½ taels by which credit transactions are carried on, was as low as $52 small silver coin at the beginning of the year, while it advanced until at the end of the year a quotation of $65 small silver coin was reached. Such an advance, with the many fluctuations during the year, not only had a tendency to make business unsettled and uncertain, but also imposed hardships upon the merchants in making their cash settlements when the proper days arrived.

Another cause of the diminishing trade of Newchwang is the condition of the Liao River, which is constantly becoming more difficult of navigation. The import trade for 1913 shows the effects of the river trouble more than the export trade, but it may be expected that, unless something is done soon in the way of conservation work, in 1914 and in succeeding years still more alarming losses will be experienced in both import and export trade.

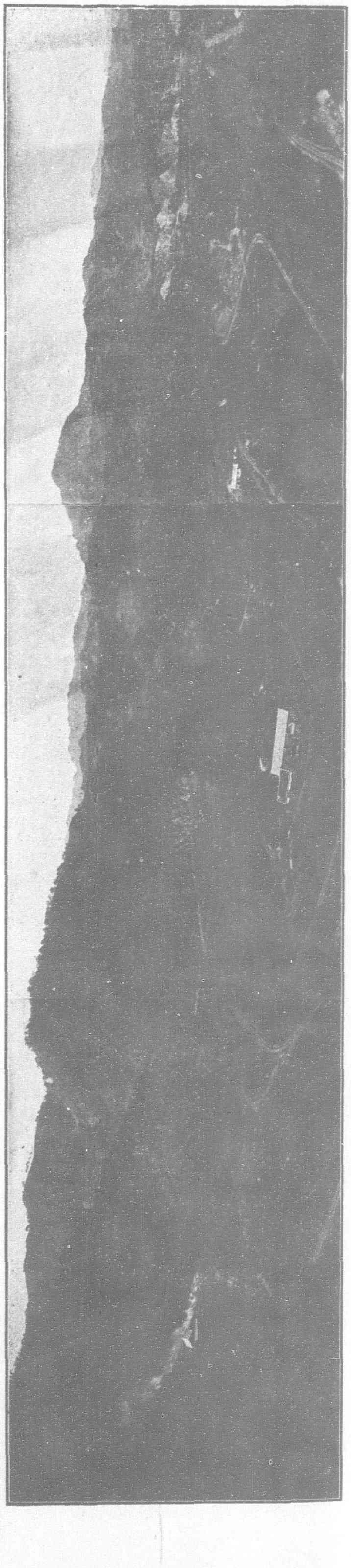
Since the partial destruction, in the fall of 1911, of the weir at Shuang Taitzu, which was designed to revert the flow of the Liao into its former channel, no work has been undertaken in the way of restoring and completing it. Toward the end of the year, however, the matter of the Liao River and bar conservancy was again taken up by the Newchwang consular body, and the rules and regulations provisionally signed by that body and the local taotai in July, 1911, which failed of ratification by the higher officials, were, with a few modifications, again proposed. It is hoped by the foreign and Chinese commercial interests in Newchwang that this scheme will receive the Government's approval, and that it will undertake the works on the upper Liao, which includes the Shuang Taitzu weir, coincident with which work it is planned under the agreement that the conservancy work on the lower Liao shall also be undertaken.

Unless the works planned be carried out soon Newchwang will find itself yearly more restricted in its trade with the interior. At present the greater volume of the river is diverted into the Shuang Taitzu, and the Liao is little more than a tidal estuary. For several months past the water supplied by the Japanese waterworks, the pumping station of which is located at Tien Chuang Tai, some 25 miles from the sea, has been brackish, showing how far the tides now run up the river.

COTTON GOODS

There was a general decline from the figures for 1912 in the imports of nearly all kinds of cotton goods. This decrease was not confined to American goods, but was shared by those of both British and Japanese manufacturers. The only American increase for the year worthy of mention was in shirtings, from 145,655 pieces in 1912 to 167,395 pieces in 1913. American sheetings dropped from 282,702 pieces in 1912 to 225,280 pieces in 1913, and drills from 125,347 pieces to 72,670 pieces in the same years, American drills thereby again yielding first place to those of Japanese manufacture.

American cotton goods are recognized by the Chinese as superior to those made in Japan, the sales of which have so greatly increased in the last few years in the Manchurian market. The superiority of American goods lies in the fact that not only are they of finer and more substantial texture, but they are also less heavily sized than the Japanese, which, when washed, lose a greater percentage of their weight than do the American. Japanese goods have supplanted those of American manufacture for a number of reasons contributing mainly to cheapness, of which may be mentioned: (1) the smaller cost of transportation from the mills and incidentally the advantage of direct and frequent shipments; (2) the presence on the ground of Japanese firms with extensive facilities for the distribution of goods, enabling the Chinese dealers to obtain supplies in



The Antung-Mukden Railway: Black Mine Pass.

quantities as small as they desire, while in buying American goods through Shanghai importers it is necessary to contract for considerable quantities at a time—more than most native dealers are able to handle; (3) the difference in time required for filling a contract, this being two or three weeks in the case of Japanese against two or three months required for American.

The general decreases in most lines of cotton goods, not only American but also those from other sources, may be attributed largely to local financial condition. No business was done in cotton goods during 1913 by the British-American Tobacco Co., which in 1911 undertook to act as an agency for American manufacturers in this line, as the enterprise, at least in this district, was abandoned during the preceding year.

FLOUR TRADE

Imports of foreign flour, which is American, decreased from 15,353,883 pounds in 1912 to 9,296,968 pounds in 1913, a loss of 6,056,915 pounds, while Chinese flour shows an advance from 18,535,537 pounds to 24,937,243 pounds in the same period, an increase of 6,401,706 pounds, or slightly more than the decrease in American flour. During the greater part of 1913, as compared with 1912, exchange rates were unfavorable to the purchase of foreign flour. Consequently the American product decreased, while there was a corresponding increase in the importation of flour from the Shanghai mills. A considerable quantity from mills at Tiehling, north of Mukden, is also on the local market.

INCREASED SALES OF AMERICAN KEROSENE

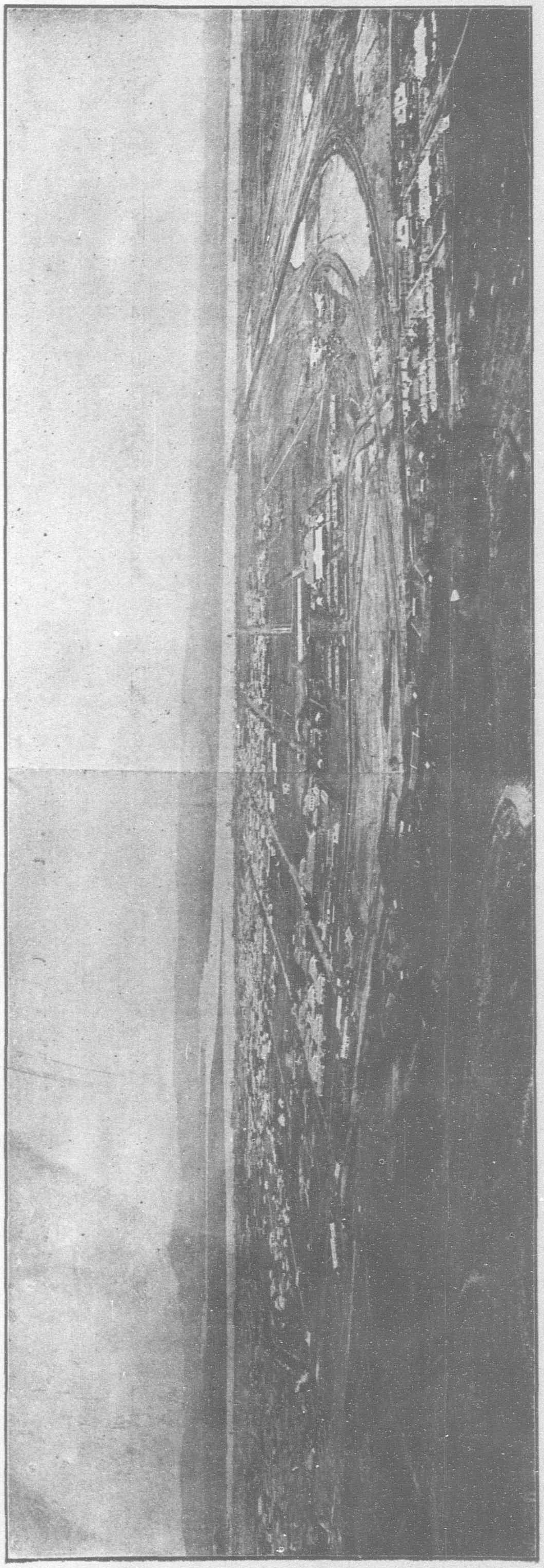
The imports of American kerosene increased from 6,658,225 gallons in 1912 to 8,247,587 gallons in 1913. Russian oil, none of which was imported in the preceding year, appears in the returns for 1913 to the extent of 1,158,748 gallons, but of Sumatra oil only 657,336 gallons were imported, as against 2,660,021 gallons in 1912. There had been no imports of Russian oil since 1910, when 221,110 gallons were brought in. The reason for the large importation of this oil was the shortage of Sumatra oil, which forced the Asiatic Petroleum Co. to turn to Russia for supplies. Some 1,190,000 gallons of American oil were imported in bulk from California by that company during the year. This was the first importation of American oil into Newchwang in bulk, all oil thus far imported by the Standard Oil Co. being tinned.

Deducting the imports of the American product made by the Asiatic Petroleum Co., it will be seen that the Standard Oil Co.'s imports increased in 1913 over those for 1912. A lack of adequate storage facilities was the only thing that prevented greater importations by that company, as there was an increase in demand over the preceding year. This lack of storage facilities is to be remedied by the erection during the current year of a new installation. Congested conditions were heightened moreover, by the difficulties encountered in the navigation of the Liao River. At times, especially in the autumn after what was an unusually dry summer, the water in the river was so shallow that junks were able to carry only quarter cargoes.

SOYA BEAN AND ITS PRODUCTS

The great staple of export from Newchwang is the soya bean and its products, oil and cake. Exports of beans declined from 2,101,447 hundredweight in 1912 to 1,815,411 hundredweight in 1913, but an increase in bean cake and bean oil, from 5,272,656 hundredweight to 5,638,399 hundredweight for the former and from 15,034,824 pounds to 15,062,423 pounds for the latter, took place in the same period.

The statistics show no exports of these products to America or to European ports. Any that found their way to America were probably shipped from Japan. There were increases in the exportation of all these commodities to Japan, with decreases to Chinese ports which, however, still receive most of the oil. The reason that Newchwang contributes nothing in this line, at least direct to European and American trade is that, of the South Manchurian ports, Dairen is the one doing the more distinctively foreign trade, while Newchwang holds the supremacy as regards coastwise commerce, besides enjoying a considerable share in the Japanese trade.



View of Antung with the Yalu River in distance.

The decrease in the shipment of beans was not so marked in 1913 as it was in 1912 from the preceding year, but there is reason to believe that on account of the difficulties experienced in navigating the Liao River during the past year the exportation of all three—beans, oil, and cake—will considerably decrease in 1914, as the stocks that have arrived since the closing of the river and are stored pending the reopening of the port are much smaller than those for the corresponding period in 1912, which enabled a much better showing to be made in 1913 than would have otherwise been the case.

The total bean crop for the Newchwang consular district in 1913 was estimated at nearly 138,000 tons, about the same as the 1912 crop. However, the 1912 yellow bean and upland crops were better than those for 1913, while the lowland crops of green and black beans were larger in 1913 than in 1912. Thus, for this district the two years' crops were approximately the same.

COAL SHIPMENTS INCREASE

The exportation of coal jumped from 193,125 tons in 1912 to 307,461 tons 1913, which shows that Newchwang is rapidly coming to the fore as a coal shipping port. Practically all of this coal is the product of the Fushun and the Penchihu collieries—Fushun, east of Mukden, and Penchihu, to the southeast of the same city. In amount Fushun coal leads that from Penchihu by a considerable margin. The chief ports to which exports went were Shanghai, Canton, Makamatsu, Fusan, Yokohama, and Tientsin.

The returns of the South Manchuria Railway wharf office show that of 601,260 tons of goods, received at Yingkou (Newchwang) during 1913, 384,113 tons, or over 60 per cent, were coal.

EXPORTS TO THE UNITED STATES

The declared value of the exports to the United States in 1913 was more than double that for the previous year. The increase was mainly in the exports of bristles, while skins of various kinds made up most of the remainder. It is anticipated that during the current year further substantial increases will take place, especially in bristles. Of a total of 123.25 tons shipped from Newchwang during 1913, 59.96 tons, or nearly one-half, were invoiced to the United States. No invoices for shipments to the Philippines, Hawaii, or Porto Rico were certified during the year.

Exports to the United States in 1913 were as follows: Bristles, $86,806; household goods, $450; sesamum seed, $107; dog skins, $10,816; fox skins, $1,151; goat skins, $15,173; marmot skins, $137. In 1912 the value of the exports was: Bristles, $48,370; dog skins, $4,078; goat skins, $3,774.

RAILWAY TRAFFIC

There was an increase in 1913 of nearly 20,000 tons in the amount of goods forwarded from the wharf office of the South Manchuria Railway, Yingkou, while there was an increase of nearly 200,000 tons in the arrivals of goods at the same office, traceable largely to the greatly increased coal business previously mentioned.

PANAMA-PACIFIC INTERNATIONAL EXPOSITION

GREAT NATIONS OF THE WORLD PARTICIPATE IN NAVAL PAGEANT

Early in 1915, the year that will be marked by the formal opening of the great canal which unites the highways of the oceans of the East and the West, the United States will be host to one of the most impressive assemblages of representives of friendly nations ever held in the history of civilization.

At the celebration which is to give educative expression to the legitimate joy of nations at this joining of the waters of the two greatest of the world's oceans, with all its attendant simplification and improvement of their commercial, social, and political relations with each other, there will be gathered exhibits expressive of the highest development in all the arts and industries of the participating nations. The last, the completest, and the most beautiful of the varied results of man's long endeavor to make life less cruel in its processes, and more intense in its compensations, will be gathered in a setting which for natural and architectural beauty has quite probably never been equaled in the history of the world.

And in contrast with these aggregate and inspiring evidences of man's long efforts to create, will be the gathering of the most powerful types of instruments of destruction his ingenuity has been able to devise.

These instruments will be gathered not to destroy; but to put an end to destruction.

The modern battleship is man's most efficient expression of the will to destroy, and during the month of January, 1915, there will assemble at Hampton Roads, Virginia, warships representative of the great maritime nations, which are to participate in the international naval pageant to follow the formal opening of the Panama Canal.

After formal ceremonies of reception at Hampton Roads, the vessels participating will proceed to the waters of the Caribbean Sea, pass through the canal, and thence up the west coast of the continent to San Francisco, where they will enter in impressive formation at some date, yet to be fixed, early in March.

Their advent will be the first event of international importance following the opening of the Panama-Pacific International Exposition on Saturday, February 20, 1915.

Six nations already have formally accepted the invitation of the State Department of the United States to send fleets of their navies to take part in the international cruise. They are: Great Britian, Germany, France, Japan, Argentina, and Portugal. According to Commander David Foote Sellers, U. S. N., naval aid to President C. C. Moore of the exposition, many other nations will soon follow these powers in formally signifying their intention to participate in the naval celebration.

After the fleets of the various powers have gathered in Hampton Roads in January, 1915, the highest officers of the vessels assembled will disembark and proceed to Washington, where they will be formally received by President Wilson, and the principal officials of the United States. After the completion of these ceremonies of reception, the officers will return to their vessels, where President Wilson, from his yacht, the Mayflower, will review the warships of the world as they steam out upon their long cruise

This cruise, of course, is intended to be the initial voyage of representative ships of all powers taking part through the canal, and in order that the fleet which is to be sent by Japan, may not be compelled to pass through the Panama locks before the ceremonious passage of the pageant, it is expected that this squadron will start some months earlier on an around-the-world cruise through the Suez Canal to Hampton Roads.

While the names of none of the vessels to be sent by the foreign powers have been given out as yet, they will be typical of the latest developments in fighting craft of each nation, and those so equipped will carry their full quota of torpedo and air craft.

On passing through Golden Gate into the Bay of San Francisco, the fleets will be met by fleets of aeroplanes, which will circle in formal figures above the waters of the harbor. The fighting craft of air and water will then proceed in formal review past the bay frontage of the Exposition grounds, making their spectacular progress through one of the most beautiful marine settings to be seen in the world.

It has not yet been determined to whom the honor of the command of this brilliant cruise will fall. Secretary of the Navy Josephus Daniels, in his recommendation to Congress that the ranks of vice-admiral and admiral be created in the United States Navy, in addition to other reasons, recognized the international maritime law whereby the officer of highest rank, irrespective of nationality, takes command of international fleets. Unless these ranks are created, it is believed that some commander of some one of the visiting fleets will be found to rank higher than any attending American officer, and will consequently be given command; as the only officer ranking as Admiral in the United States Navy is George Dewey, whose commission was bestowed by special act of Congress shortly after his victory in Manila Bay during the Spanish-American war, and it is feared that Admiral Dewey's health is such that it would not be desirable for him to undertake the fatigue of commanding on so long a cruise.

The American Ambassador, Thomas Nelson Page, at the Trafalgar Day banquet of the Navy League, held at the Hotel Cecil, London, commented upon this pageant as the "most mighty and impressive naval demonstration in the history of the world."

And, as evidence of the peace spirit in which this friendly assemblage of great machines of war will be held, Ambassador Page was heartily cheered by the British naval men present when, after announcing the British Government's acceptance of the invitation of the United States to participate in this cruise, quoting Lord Nelson, he said: "England's participation will be a happy feature of the celebration of the centenary of peace, and the American admiral leading this fleet can say with Nelson that he had the happiness to command a band of brothers."

Similar expressions of good-will accompanied the acceptance of the United States government's invitation to participate by the governments of Japan, Germany, France, Portugal and Argentina.

Commander Sellers has announced his belief that there will be at least 200 vessels in the pageant, including colliers, other auxiliary craft and submarines.

Although no definite arrangement of any of the more minute details of the cruise has been arranged as yet, undoubtedly target practice contests of international interests will be arranged to be held after the completion of the cruise in the channel at Santa Barbara.

It has been suggested that the Battleship Oregon, of the United States Navy, which made the historical voyage through the Straits of Magellan at the beginning of the war between this nation and Spain in 1898, lead the procession of warships through the canal. However this has not been determined as a certain feature of the event.

The old wooden steamer Hartford, which was the flagship of Admiral Farragut during the civil war, and the Olympia, Admiral Dewey's flagship, during the battle of Manila Bay, probably will be anchored close off the exposition grounds, where they may be visited by sightseers. These two famous ships will be historically typical of the development of the art of war-draft during the last century, and probably will have, as a third contrasting sister exhibit, one of the most recent types of dreadnought from the fleets gathered in the harbor after the spectacular cruise through the canal.

The illuminations of this fleet, as the vessels lie anchored off the exposition grounds, in full view of the two mile long promenade—the beautiful Esplanade—which runs the length of the grounds between the wide turfed gardens of the Marina, the yacht harbor, and the great exhibition palaces, will, taken in conjunction with the illuminations planned for the exposition proper, constitute a night scene indescribable and incomparable.

And when the sightseer reflects that these big, graceful bird-like shapes, glittering like jewel decked swans, are, nevertheless, the inexorable iron monsters which man has built to embody the cruelty of the will which rules by force of destruction, now gathered harmless and shorn of their menace to do honor to the will of man to create—to achieve—and to rule by enlightenment, as exemplified in the triumphal undertaking of the Panama Canal and in its attendant world-wide widening of sympathies, and facilitation of beneficial intercourse between nations, he will gain a new and illuminating vision of the World's Peace.

TRADE PROJECTS IN JAPAN

During the month of April the amount of capital required for various business projects in Japan was 25,220,000 yen according to the Hypothec Bank of Japan returns and 25,581,900 yen according to the Bank of Japan returns, writes The *Japan Advertizerr*. Thus the result of tbe investigations by the two leading institutions of Japan are nearly the same, but the above figures show a great difference compared with 49,000,000 yen which is the amount of capital needed for various business projects during the month of March, though the Tone Water Power Company alone absorbed as much as 16,000,000 yen in that month. Thus deducting this 16,000,000 yen, the total amount required in March was 33,000,000 yen which is 8,000,000 yen more than the amount required in April. Since the beginning of this year, new business projects decreased month by month. The largest new enterprise was the Tokai Water Power Company of 3,000,000 yen, while the largest scheme of extending the scope of business was made by the Nagoya Electric Company requiring 4,000,000 yen for that purpose, and the rest of the business propositions were of minor importance. The aggregate total since January this year was 146,502,000 yen according to the Hypothec Bank of Japan returns and 120,655,000 yen according to the Bank of Japan returns. The result of the investigations by the Hypothec Bank of Japan shows that the capital required for newly establishing companies decreased by 22,835,000 yen, while the capital needed for business extension projects also decreased by 40,225,000 yen as compared with the same period of last year, but the amount of debentures issued increased by 4,985,000 yen.

The Bank of Japan returns for April show:—Banking business, 2,330,000 yen; Electric, 9,050,000 yen; Mining, 600,000 yen; marine products, 500,000 yen; railways and tramways, 2,850,000 yen; industrial, 2,600,000 yen; commercial, and others, 7,650,000 yen; total 25,580,000 yen.

The Hypothec Bank of Japan returns:—Industrial, 5,540,000 yen; electric, 8,845,000 yen; gas business, 60,000 yen; banking, 1,740,000 yen; insurance, 2,300,000 yen; commercial, 1,470,000 yen; railways and tramways, 2,665,000 yen; shipping, 300,000 yen; mining 2,300,000 yen; total 25,220,000 yen.

FOREIGN TRADE OF JAPAN

The foreign trade of Japan during the last 10 days of April was 20,382,000 yen in exports and 19,507,000 yen in imports, showing an excess of exports of 875,000 yen. The total from January was 209,809,000 yen in exports and 254,451,000 yen in imports, indicating an excess of imports of 44,642,000 yen.

During the last 10 days of April there were increased exports of raw silk, cotton yarn, copper, matches and refined sugar, and also increased imports of raw cotton, beans, kerosene, iron material and machinery. An official of the Finance Department, referring to the foreign trade, stated that during the second 10 days of April there was an excess of exports of about 500,000 yen, while the excess of exports during the last 10 days of April was about 900,000 yen. This is a very satisfactory showing. He added that the cause was the low rate of interest in Japan combined with the fall in the prices of commodities which naturally reduced the cost of production of articles for export.

The Yokohama Customs returns show that the trade of Yokohama during the last 10 days of April was 10,252,584 yen in exports and 6,435,720 yen in imports, showing an excess of 3,816,864 yen in exports. The total from January was 98,338,867 yen in exports and 79,595,927 yen in imports, indicating an excess of exports of 18,742,940 yen.

Some time ago it was reported that Negishi and Nakamura of Yokohama being oil producing lots three capitalists of Niigata have applied to the Mines Superintendence Office of Tokyo for permission for prospecting over the lots covering an area of 990,000 tsubo. The Yokohama Municipality raised an objection for the reason of the above districts being residential lots. Now two other capitalists of the same prefecture have made a similar application to the Mines Superintendence Office, this time to prospect Horinouchi, Maita and Okamura of Yokohama over an area of 980,000 tsubo. The above districts mostly consist of farms, and moreover being the sections officially appointed for industrial purposes, the municipality will not raise any objection. It is reported that nobody has ever been observed making any survey of any sort in the localities referred to above, and the whole affair is regarded by some people as a mystery.

The Canada-Japan parcel post treaty will be revised before long, the negotiations between the Japanese and Canadian postal authorities on this subject progressing very satisfactorily. The existing treaty was concluded 23 years ago and it is now regarded as an obsolete instrument, the maximum weight being too small and the postal charges too high. The new treaty is to be mostly on the lines of the latest compacts between Japan and England and other foreign countries. By the new treaty, the maximum weight of 7 lbs. will be changed to 11 lbs. and the postal fees will be greatly reduced and various other facilities introduced. Japanese steamers will be authorised to carry parcels by the new arrangement.

A new Russo-Japanese telegraph convention was signed in Tokyo on May 1, and the telegraph rates were greatly reduced by the new arrangement. The treaty will be made public after obtaining the final approval of the two Governments.

SHANGHAI ELECTRIC CONSTRUCTION CO.

The report of this Company for the year to December 31, 1913, shows a profit of £34,726, which compares with £24,727 for 1912. Including £1,974, the amount brought forward from the preceding year, the total standing to credit of profit and loss account, before making any appropriations, was £36,700. There has been transferred to reserve for renewals account £10,000, and there has been applied in reduction of the preliminary expenses account £3,000. The directors recommend a dividend of 7 per cent. for the year, less income-tax, leaving to be carried forward £1,300. The loss by exchange on subsidiary coinage in 1913 was £25,811, which is over 8 per cent. on the capital of the company. The original equipment, which consisted of 65 motor-cars, will, when the orders in hand are completed, have been increased to 90 motor-cars and 55 trailers. The delay in initiating railless traction in Shanghai has been disappointing. Under the terms of the contract for the supply of the cars a date for delivery was fixed which should have permitted of the service being started during March. None of the seven cars has, however, yet been shipped. The contractors are under penalties. After lengthy negotiations with the Municipal Council, revised rates for electric current purchased by the company from the Council were agreed, with effect from March 5, 1913. The new scale shows a material reduction from the rates previously paid by the company. The benefit of the revision, so far as the past year is concerned, has been incorporated in the accounts now submitted. Through running over the company's system and that of the French company has been in operation throughout the year, and about 30 per cent. of this company's receipts were derived from through cars. It is expected that the through services will be increased shortly.

JAVA SUGAR CROP

The sugar production in the Residency of Soerabaya in the years 1909, 1910, 1911, 1912 and 1913 amounted respectively to 4,030,450, 4,378,667, 5,172,845, 4,524,781 and 4,959,000 piculs. In the Residency of Kediri the production was respectively 2,506,967, 5,693,747, 3,053,046, 3,039,024 and 3,042,900 piculs. The Residency of Pasoeroean, again, produced in those years respectively 2,667,434, 2,950,843, 3,432,707, 3,262,606 and 3,209,000 piculs; the Residency of Madioen 740,846, 705,607, 833,725, 775,711 and 871,000 piculs; and the Residency of Besoeki 946,310, 1,013,890, 1,106,224, 963,697 and 1,062,000 piculs. The total production for 1912 was 22,544,100 piculs and for 1913 23,623,800 piculs.

THE HANOVER LOCOMOTIVE WORKS

SIXTY-EIGHT YEARS OF LOCOMOTIVE BUILDING

On January 30, 1914 the 7000th engine built in the Hanover Locomotive works was handed over for service. This was a ten wheel coupled superheated steam goods locomotive built for the Prussian State Railways, with a six wheeled tender having a water capacity of 3,650 gals. for heavy goods traffic. The boiler of this engine consists of two cylindrical rings of 5'3" diameter, its axis is 8' $10\frac{3}{8}$" above the rails. The fire box is narrowed in towards the frames and supported between the frame plates, whilst its rear plate is flanged towards the front. The front row of roof stays is movable. The front and side sheets of the fire box are stiffened by hollow rolled copper stay bolts.

The Schmidt superheater which occupies 24 smoke tubes each of $4\frac{15}{16}$"-$5\frac{3}{16}$" diameter is arranged in four rows. As opposed to earlier practice the smoke tubes have been advanced towards the centre of the tube plate and are surrounded at the sides by a large number of boiler tubes. Experience goes to show that this considerably decreases the strain on the tube plate.

The engine is fitted with piston valves at $8\frac{5}{8}$" diameter with double steam admission and narrow elastic rings $\frac{1}{4}$" wide. The engine is also fitted with a pressure compensator (cock for compensating the spaces in front of and behind the piston) which can be put in action by hand when the engine is running with the regulator closed and further with air valves of the Knorr type which can be operated with circulation device.

In order to allow the engine easily to negotiate curves the first and fifth coupled axles are given $1\frac{3}{32}$" play on each side. The flanges of the third or driving axle are turned down $\frac{3}{16}$" more than the others.

The engine is further fitted with the following accessories:

Feed heater worked by exhaust steam of the latest type adopted by the Prussian State Railways, Schmidt & Wagner's valve regulator, Friedmann's lubricating pump with 6 discharge points, Marcotty's smoke combustion device, Kontze's hand sander, steam brake, steam heating and gas lighting.

The injector which is fixed at the right side of the engine feeds direct into the boiler, whilst a steam pump is placed at the left side of the locomotive. The latter makes 40 strokes a minute and supplies 53 gals. per minute, pumping the water from the tender through the feed heater into the boiler.

The feed heater is fastened to the frame plates, it consists in the main of a reservoir into the front and back walls of which 180 brass water tubes are beaded. The front and back plates of the feed heater are closed by means of dished cast steel covers which form with each tube plate a water chamber.

The feed water enters these chambers between the tube plate and the cover and passes through the brass tubes. The space between the sheet iron barrel, the tube plates and the brass tubes is occupied by steam, for which purpose a part of the cylinder exhaust from the two rear exhaust chambers and the exhaust from the feed water and air pumps are utilized. The exhaust steam surrounds the tubes filled with water and thus gives up its heat to the boiler feed water. The heating surface of the feed heater tubes in contact with the steam is 166 sq. ft. The condensed water formed by the exhaust steam is led off into the open air through a pipe with a wide aperture placed in the centre of the engine between the two main frame plates. The Prussian State Railways estimate that a saving in coal consumption to the extent of 10% is obtained by the use of these feed heaters.

The boiler of the engine is suitable for developing permanently 1,000 HP.

The six wheeled tender, the tanks of which have a capacity of 3,650 gals. and the bunkers a capacity of 7 tons is of the latest type of the Prussian State Railways. The diameter of the wheels is 3' $3\frac{3}{8}$", the rigid wheel base is 14' $5\frac{1}{4}$". The centre axle has $\frac{5}{16}$" side play on each side. In order to give the engine crew an unimpeded view of the line in front of them when the engine is running backwards, the coal supply is placed in the centre of the tender. The point of attack of the rear draw gear is in front of the last axle, so that swivelling of the draw hook in curves is avoided as much as possible. The lever brake acts on both sides of the 6 wheels.

The *Hanomag Journal*, from which we obtained the foregoing facts, adds:—

We think it will prove interesting on the occasion of the delivery of the 7000th locomotive to cast a retrospective glance on the locomotives built in these works since the year 1846. Although it is only possible to choose the most important from amongst these 7,000 locomotives, we think this will suffice to give the reader an idea of the development of the locomotive types built by the Hanomag; this of course will mean ignoring a number of very interesting designs.

The first locomotive was placed in service on June 15th 1846, after George Egestorff had previously built the tenders for the locomotives purchased in England by the Hanoverian State Railways.

Egestorff's first locomotive was given the name of the then King of Hanover "Ernst August." This engine was of the 2-2-2 type with overhanging fire box. (In those days engines without coupled wheels were generally used.) The boiler consisted of three rings, the second of which was the broadest. The boiler was fitted with 111 brass tubes of $1\frac{7}{8}$"-$1\frac{13}{16}$" in diameter and 13' 4" in length between tube plates. The boiler and the cylinders were lagged with wood. The frame consisted mainly of two narrow plates stretching from one end of the engine to the other, to which the hornplates were rivetted. The frame plates were bent down in front of the driving axle to make room for the cylinders fixed to the straight side walls of the smoke box. The valve chests were placed in the smoke box with a view to drying the live steam. The slide valves were actuated by inside valve motion of the Howe-Stephenson type with Sharp's links. The purchase price of the engine without tender was £1,690 which is equal to £79.10s. per ton. In 1861-62 this engine was transformed into a six wheels coupled tank locomotive for shunting purposes, the cost being £462.15s. This operation was facilitated by the fact that the tree axle box guides were all equally low on each side of the engine and were connected by a common bridge. As this transformation neeessitated the use of smaller driving wheels of a diameter of 3' 4" and as the cylinders were inclined, the rear axle had to be made the driving axle, whilst the eccentrics remained on the centre axle.

The saddle tank of this engine had a capacity of 550 gals. This engine was fitted with a feed heater of the Kirchweger type with a special chimney for the exhaust steam, which system of feed heater was used on all locomotives of the Hanoverian State Railways. After the transformation above referred to the engine weighed in working order about 23 t. 12 cwt. The engine was removed from service in 1872.

Towards the end of the year 1846 a second locomotive of this type was built by George Egestorff which was followed in the next year by a further lot of 5 engines. These latter engines were also transformed later on into six wheels coupled tank-locomotives.

Between the years 1847 and 1852 George Egestorff built 4 similar 2-2-2 locomotives for the Hanoverian State Railways which were, however, fitted with horizontally placed cylinders fastened to the frames.

As early as in 1856 the hundredth locomotive left the establishment. This was a 2-4-0 goods locomotive for the Magdeburg-Leipzig Railway.

As in those days only light goods wagons of 5 tons capacity were used the adhesive weight of four coupled wheels sufficed for hauling goods trains. For this reason similar four wheels coupled locomotives were commonly used for goods traffic on lines with not too heavy gradients. It was not until the sixties of the last century that the above Railway began to use six wheels coupled engines.

As in the case of the locomotives above described the latter engines were fitted with a type of boiler with long tubes of 13' $10\frac{1}{8}$" in length and a deep lying flat grate (distance between bottom edge of fire box and boiler bottom=2' 2"), as used by George Egestorff. This arrangement enabled the hot gases to be utilized to the full extent and a saving of fuel (coke was used in those days) to be achieved. The boiler barrel consisted of three shells made of $\frac{13}{32}$" plates, the midddle shell having a width of 3' 10". The driving and coupling axles of this engine were fitted on each side with a type of bearing springs common to both and loaded by means of levers of a type first employed by A. Borsig, which was very widely used in those days. The engine was fitted with expansion valve motion as commonly used at that time. The 100th locomotive was one of a series of five engines of the same type. The side tanks of these locomotives had a capacity of 640 gals., their weight in working order was 38 t. 8 cwt. The fact that these engines attained the age of 34 years without their boilers having to be renewed is evident proof of their good workmanship.

In October 1862 these works supplied a 2-2-2 express locomotive for the Altona-Kiel Railway. This engine bore the maker's No. 200.

Engines of the same type, which was known as the "Jenny Lind type" and was extensively used in England, were built before that time by George Egestorff for the Duchy of Brunswick. Apart from the fact that these engines were fitted with inside cylinders they are remarkable on account of having double frame plates. Whilst the outer frame plates which stretch from one end of the engine to the other serve to carry the leading and trailing axle boxes, the crank axle (driving axle) was supported by the inner frame plate which only reached to the fire box and was firmly fixed to the latter. This engine was fitted with Kitchweger's feed water heater, a part of the exhaust steam being led to the tender tank where the water was heated to about 104° F. The advantages of heating the feed water by the exhaust steam, which consisted in lessening wear and tear on the boiler and in reducing the fuel consumption, have recently led the Prussian State Railways to fit a large number of their engines with feed heaters worked by the exhaust steam. The 7000th locomotive is also fitted with this arrangement.

Up to the year 1867 George Egestorff had supplied the Altona-Kiel Railway with a further lot of five engines.

In February 1868 Georg Egestorff completed the 300th locomotive. This was a 0-4-2 type of engine for the Royal Eastern Railway, such as was used in those days on lines especially in the East of the monarchy on which traffic was moderately heavy, for hauling goods trains, mixed trains and occasionally passenger trains. This type of engine was fitted with the following accessories: cast steel disc wheels, without pressed on tyres, supplied by the Bochumer Verein für Bergbau und Gufstahlfabrikation (the counter-weights were also cast on the driving and coupling wheels), a 2 seated safety valve of the Kitson type, Stössger's smoke combustion device and Ricour's counterpressure steam brake. The engine was fitted with Allan valve motion with crossed rods. The bearing springs of the first and second axles were connected by balancers; the trailing axle was fitted with a transverse spring.

During the years 1864 to 1868 the Eastern Railway placed 49 locomotives of this type in service, 17 of which were supplied by George Egestorff. The very respectable number of 129 similar locomotives with the same axle arrangement and Belpaire fire box were built by the Hanomag during the years 1869 to 1874 for the Hanover-Altenbeken Railway and for various other lines.

The economic progress made during the sixties of the last century together with the opening up of numerous new railway lines contributed towards filling the order books of the locomotive department. As early as in February 1870 the 400th locomotive was completed; this was a 2-2-2 passenger engine built to the order of the Roumanian Railways, a type of locomotive which was then commonly used in that country for hauling light trains.

The Hanomag supplied 20 locomotives of this type within a short time to the Roumanian Railways which were established by Dr. Strousberg, and up to a short time ago these engines were still to be seen in use in Roumania, after having been 40 years in service.

The 500th locomotive left the works in November of the same year. This was an express locomotive of the 2-4-0 type with inside cylinders and was supplied to the order of the Brunswick Railways.

A locomotive of this type bore the name "Egestorff." As this was the 100th locomotive which the Hanomag had built for the Brunswick Railways it was decorated with garlands before leaving the works. This engine had a double frame the inner plates of which served for fastening the cylinders and the driving gear parts as well as for supporting the inner bearings of the crank axle, whilst the leading, coupling and driving axles were supported by the outer frame plates. The driving axle had therefore 4 axle boxes.

These locomotives, 34 of which the Hanomag had supplied during the years 1867 to 1874 to the Brunswick Railways were the only 2-4-0 express locomotives with inside cylinders built in Germany.

Whereas these works required a period of more than 24 years for building the first 500 locomotives they only required about one-tenth of that time for the manufacture of the next 500 engines. In the year 1873 the works celebrated the completion of the 1000th engine. This engine together with a 6-wheels coupled goods locomotive for the Alsace-Lorraine Railways were shown at the Universal Exhibition held in that year in Vienna. In recognition of the excellent locomotive work turned out by the firm, the Hanomag obtained the large silver medal, which was the highest award granted at that exhibition.

The clothing of the dome, sand box, safety valve and of the steam cylinders as well as of the wheel cover of a passenger locomotive of the 2-4-0 type, Works No. 1000, was of bronze containing a high percentage of copper and having the appearance of gold. The arms of the city of Hanover were fixed on the sides of the cab. The cab roof was ornamented with a border of the same metal. The Hanomag built 41 such engines between the years 1873 and 1876.

The Hanomag supplied the same Railways with a large number of similar locomotives with drivine wheels of 5′ 0″ in diameter.

On May 6, 1882 the 1500th locomotive left the works. This was a 0-4-2 passenger Tank-Locomotive for the Berlin suburban traffic. It was fitted with a vacuum brake type Hardy in addition to a counterweight brake.

The 2000th locomotive which was completed on September 21, 1888 was built for a narrow gauge railway. It might here be mentioned that the Hanomag made a speciality of the construction of such small engines. The 0-6-2 tank locomotive was supplied to the Bilbao-Durango secondary line in Spain. The line, the gauge of which is 1 metre, has heavy gradients and sharp curves. The rigid wheel base of this locomotive was only 6′ 8″. Its trailing axle of the Adams' type was given side play in the bearings, so that the engine was able to take curves of down to 165 ft. radius. In order to enable the trailing axle better to take the curves, the axle boxes were placed in special outside frames. In the year 1893 the Hanomag built the first two 8-coupled compound goods locomotive for the Prussian State Railways with a leading axle having lateral displacement, a so-called Adams' axle. One of these engines, Works No. 2500, was completed on October 12, 1893. To further facilitate the taking of curves the flanges of the tyres of the two middle axles were turned down to a greater extent than the others. These engines were fitted with a double seated valve regulator as well as a return valve of the von Borries' type. This engine has become one of the standard types of the Prussian State Railways.

The 3000th locomotive left the works on December 11, 1897. This locomotive was a 2-6-0 goods engine of the compound type. The leading axle constructed on the Adams' principle was also given lateral displacement. The engine was fitted with a Dultz' intercepting valve to facilitate starting when the high pressure piston was in an unfavorable position. We might mention that these engines can be made to haul heavy passenger trains up to a speed of 40 miles an hour, provided they are fitted with air brakes.

The 4000th locomotive was given over to the Prussian State Railways on August 1, 1903. This engine is a 4-4-0 four cylinder compound express locomotive with simplified valve motion of the von Borries' type.

The back part of the frame of this engine consists of strong plates whilst the front part is of the bar type firmly bolted to the plates. The employment of bar frames for the front part of the engine gives a sufficiently broad support for the high and low pressure cylinders of each side, which are cast in one piece, and increases the accessibility of the inner driving gear parts. The simultaneous movement of one of the high pressure piston valves and of one of the low pressure slide valves on each side of the engine is assured by a hollow axle which swivels on a firmly fixed pin. In consequence of this arrangement two sets of valve motion suffice, as in the case of two cylinder locomotives, whilst before then four cylinder locomotives of other types invariably required four sets of valve gear. The boiler of this S5 type of engine is similar, as far as its dimensions are concerned, to the S3 type of locomotive with the exception that the boiler plates are thicker to allow of a working pressure of 199 lbs. and that the boiler itself consists of two equally broad rings with butt strap rivetting.

The first engine of this design was shown by the Hanomag at the Paris Exhibition of 1900 where it was awarded the "Grand Prix."

On June 15, 1907 the works celebrated the completion of the 5000th locomotive.

This engine which is of the 4-4-2 compound passenger type was built to the order of the State Railways of the Grand Duchy of Oldenburg. This engine was fitted with the following accessories: Lindner's starting device (conduction of live steam to the low pressure cylinder, the valve motion being in full gear) steam dryer of the von Borries' type built into the receiver (passage of the steam from the high pressure to the low pressure cylinder through 46 heating tubes each of $1^{9}/_{16}''$—$1^{13}/_{16}''$ dia., grouped to form a bundle in the smoke box) and with Staby's smoke combustion device.

The 6000th locomotive was completed in the works of the Hanomag on September 20, 1910.

This engine is fitted with Schmidt's smoke tube superheater and piston valves as well as with a valve regulator of the Schmidt & Wagner type. The engine is further equipped with a steam brake acting on one side of the second and hind axles.

Although the foregoing expose deals principally with locomotives built for German railways (only two of the engines described were furnished for foreign lines), yet the reader will readily notice the gradual progress that has been made during the last 70 years. This result has only been achieved by hard and resolute work. Success, however, attended the Hanomag's efforts and from the day on which the Locomotive Superintendent of the Hanover State Railways gave Egestorff's small establishment—and it was not without hesitation that he did so—the order to build the first locomotive, from that day up to the present time the Hanomag's customers and the firm have worked shoulder to shoulder in the endeavour to attain technical perfection. Thanks to this co-operation the Hanomag has developed into a establishment which during the year 1913 supplied some 450 locomotives worth about £1,373,000 for railways in all parts of the world, not to speak of stationary steam engines, boilers and other specialities of the firm.

NAVIGATION ON THE YALU

With many towns along it, the Yalu has hitherto been greatly lacking in facility of communication both on land and water, says the *Seoul Press.* Small crafts have, it is true, been playing between the towns, but the service has not been regularly undertaken, and communication along the river has hitherto been in a very bad way. This has brought in its train an exorbitant rise in the price of commodities in those towns, owing to scarcity of them in the markets. In the circumstances the necessity of opening a regular service on the Yalu has never been in question.

We now learn that the Government-General has lately ordered the opening of two regular services between New Wiju and Chungkangchin, 220 miles in distance, and between New Wiju and Kangkai. Thirty boats for passengers and 100 lighters for cargo will ply between the three places every day, leaving each port at reasonable intervals, and touching at leading towns along the river, 27 in number. It takes generally two or three days to come down the river but more than two weeks at least to go up.

It is not considered that this condition will be improved by the opening of the regular service just commenced, but it is thought that the number of boats leaving in succession may offset the inconvenience arising from the slow sailing.

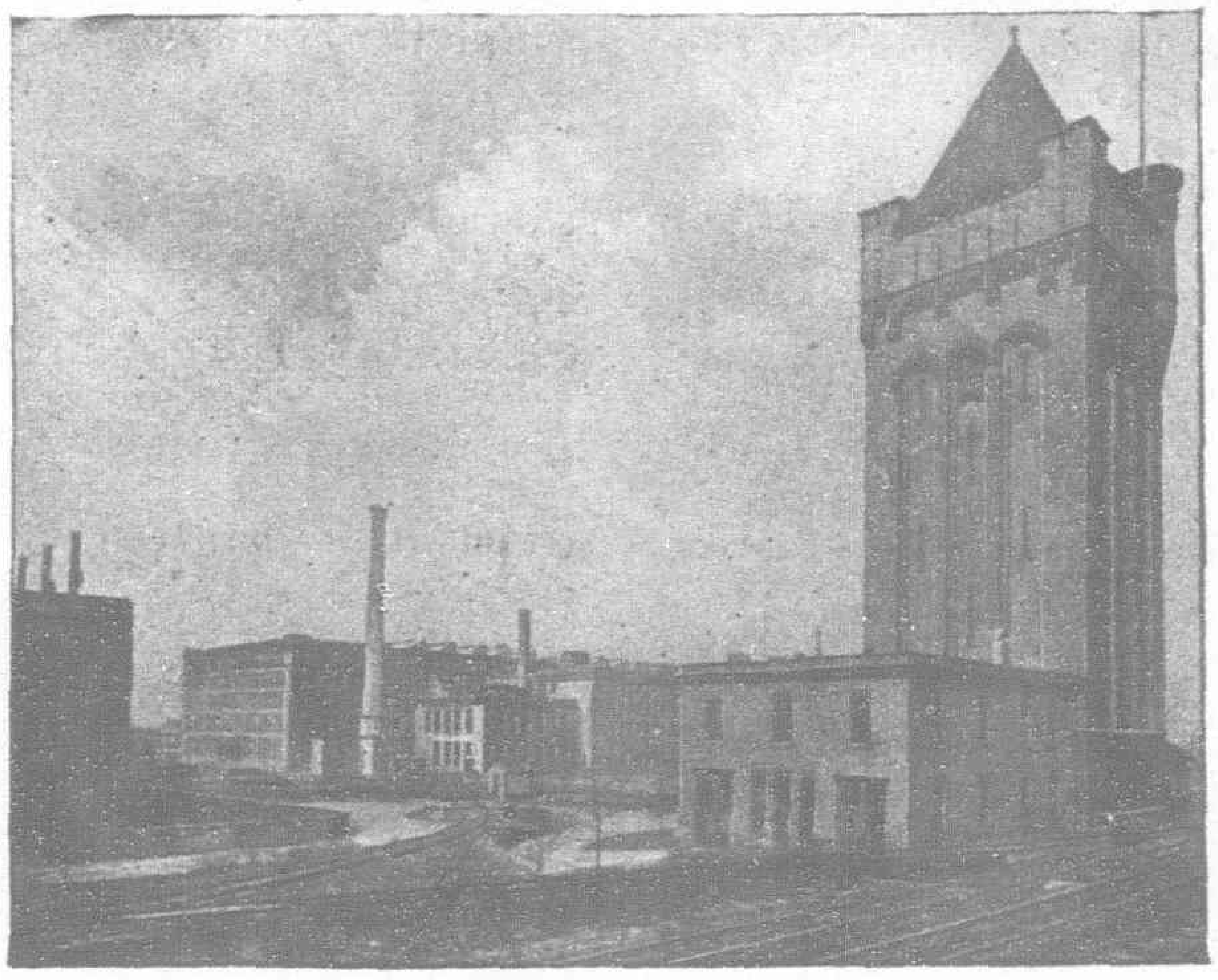
WIRELESS STATION FOR HONGKONG

The Hongkong Government has decided to establish a wireless telegraphy station on the island at an estimated cost of $100,000, with a range of 300 miles. The work will be completed by the end of the year. For some years past the commercial community of Hongkong has agitated for a "wireless" station, the absence of which has frequently caused serious difficulty. The *Siberia* incident emphasised the need of a commercial station in the colony, and the determination to establish one may be a direct outcome of that affair.

WONDER-PALACE OF HAWTHORNE

THE ROMANCE OF THE TELEPHONE

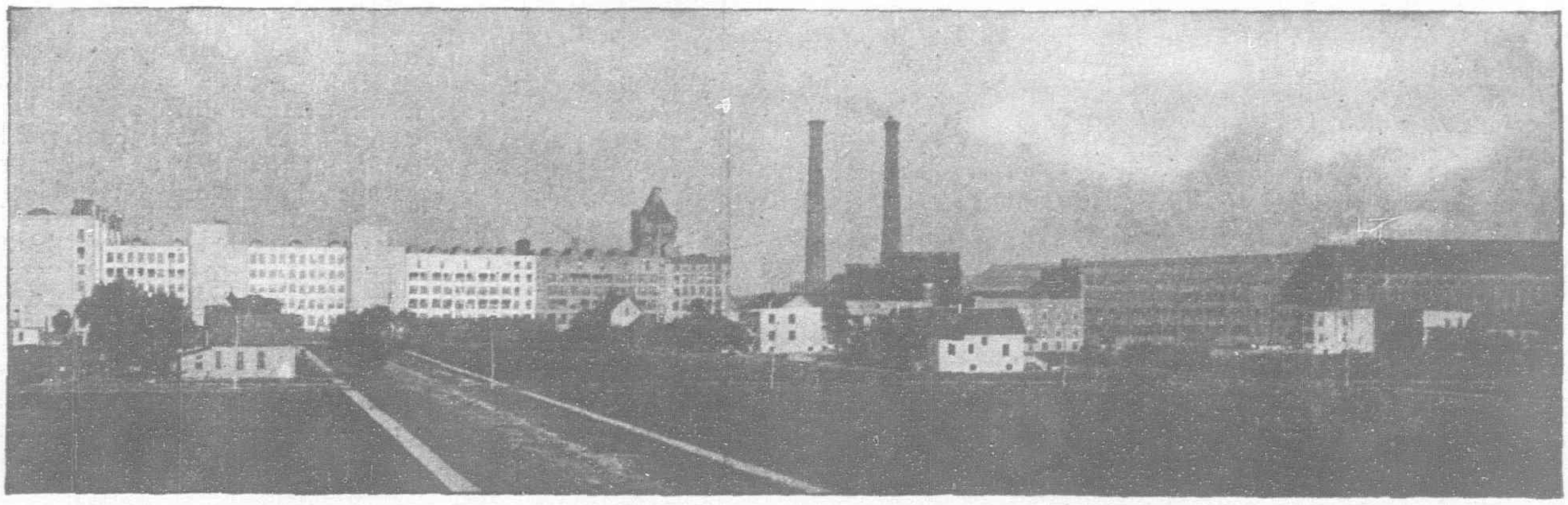
As Mr. H. Bedford-Jones says in the *Popular Electricity Magazine*, we are apt to ignore the fact that we are surrounded by contrivances and conveniences that we think little about because custom has staled our appreciation. The object that is seen every day and constantly used is accepted as a matter of course, and we seldom give a thought to the ingenuity of mind that led to its invention, or the magnitude of the processes that are involved in its construction. So is it with the telephone. We use it, occasionally revile the unfortunate operators who make the connections for us, and think no more of the matter. That it is worth thinking about will be seen from the following description by Mr. Bedford-Jones of the works of the Western Electric Company at Hawthorne, Ill., U. S. A.



Water Tower.

Twelve thousand men, two and a half million square feet of floor space, an engine room of nearly 10,000 kilowatt power, forests of whirling belts and gyrating spindles, shops covering 200 acres of ground—and all these giving themselves to the production of certain electrical supplies! It symbolizes America, the paradox of history, does this Western Electric Company's plant at Hawthorne. Yesterday a host of infinitesimal energies would create a single tremendous product. To-day a host of tremendous energies create a single infinitesimal product. Yesterday untold thousands of men worked for years on some very great thing such as the Pyramids. To-day a host of giants works on some very little thing such as your desk telephone.

We seldom pause to realize the greatness of our little things, even though we know that the fragile moth will fret away our heaviest robes, that the delicate rust will consume our thickest armor. Pick up a strand of wire from your telephone; how long would it have required for the deftest workman of a century since to have wrapped this wire? And yet, in this wonder-palace of Hawthorne it is turned out in a few seconds. Machinery? No; something much greater than machinery, as you will see in time.



Telephone Apparatus Shops Work Gas Plants Central Works Building Foundry

It is extremely imposing on first sight, is this central factory of the Western Electric Company, in which is built all apparatus for the Bell telephone system. The name of the concern is not spread on walls and roof in pompous display. But one's first impression is that of solidarity—the Spirit of the Machine lays hold of one when the gates are passed, and from being a very indefinite and formless shape takes on a gradually increasing growth until at length one is staggered by its complex magnitude.

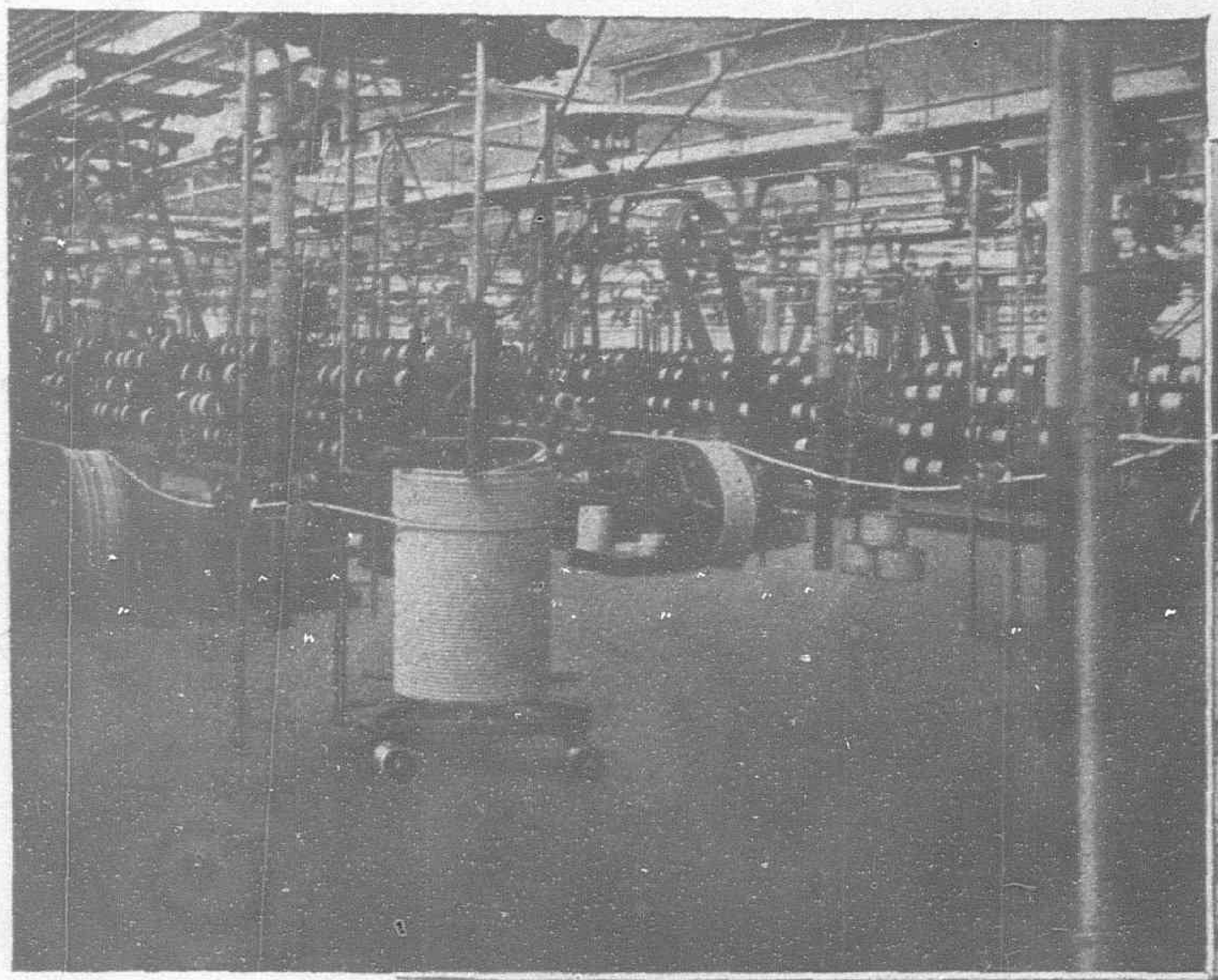
The gates open upon a broad street, bordered with massive buildings which are apt to increase one's certainty that one of the prime objects of factory buildings is the *enclose things*. With this in mind, you peep inside the door of the warehouse as you pass—and thereafter hold your peace humbly enough.

Now the broad street curves and breaks before you. On the right stretches interminably that gigantic warehouse, more dignified under its proper name of General Merchandise Department. Ahead is a low building in the center of a flower filled park; the hospital, this, with the chimneys of the power plant towering up behind. To the left lies a vista of great buildings; but from this your eye turns to a sheet of spray—the ever flowing feed of the reservoir, and beyond this the water tower.

This square hewed, massive tower is the center of the works—the grim bulldog ever ready to grip the fire demon. Notwithstanding that all the buildings are fireproof, fire walled into sections, and equipped with automatic sprinklers, a trained brigade of firemen is maintained, and around the plant are scattered 45 hydrant houses, which contain all necessary material. At Hawthorne the fire hazard is eliminated, or reduced to a minimum. Even should the two large pumps fail, there is another reservoir and station at the hardwood lumber yard, half a mile away, and the two stations are interconnected.

The hospital, although small, is well able to handle the 60 to 80 cases a day it receives, and it is absolutely complete to the last detail. To one who knows much of hospital work, it is a joy to find such a perfect equipment in a factory; yet it has exactly the same relation to the company's dividends as have the baseball and athletic fields, the tennis courts and restaurants, the band and the library, the men's clubs and the cases of trophies.

What an industrial concern cares about is its employees' work. And through welfare lies good work. In the spending of money to-day lies the saving of money to-morrow. No matter how small a hurt, every injured workman goes to the hospital; although the majority of cases are very slight, the hospital is equipped to handle everything. This is more than philanthropy,



Forming the cable core on the Stranding Machine.

Presses applying the Lead Sheath.

it is good business. Athletics, a mammoth restaurant, the largest in Chicago, libraries, clubs, these are not only philanthropies, but methods of business. That this is true shows in the things made and the men who make them. The products of Hawthorne are electric appliances, but its by-products are *men*.

A striking instance of this is shown in the engine room. Here are placed three 2,000 kilowatt steam turbines. When they were to be installed it was decided to place them on stilts instead of on a solid foundation, in order to give increased room beneath.

"That is impossible," decided the outside engineers. "The foundation must be solid."

The Hawthorne engineers decided to attempt the impossible To-day you can stand beneath those great turbines, going at top speed, and placing your hand on one of the six stilts supporting each engine, feel hardly a tremor. The stilts are steel and concrete and the men of Hawthorne achieved another triumph.

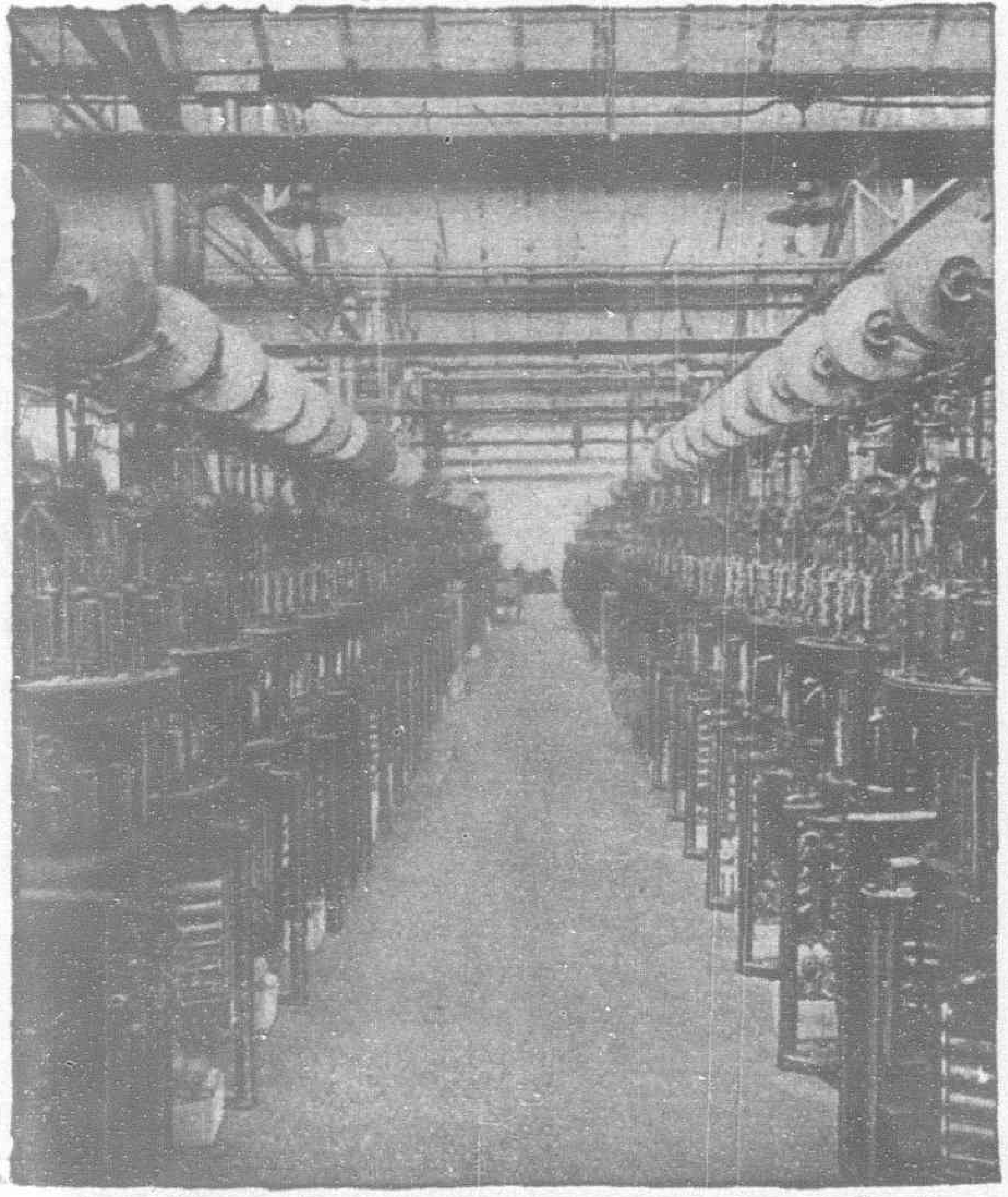
There are two things which stand out pre-eminent above all others in the mind of the visitor and which send him away thoughtful. I visited that gigantic warehouse, through which pass some 13,000 freight cars per year; I saw the piles of crates and boxes, each pile in limits painted on the floor, while electrical trucks loaded or unloaded them. I went through the telephone apparatus shops, with their miles of lathes and punching machinery, through slate grinding and polishing works and lumber mills. I went through the foundry and then through the cable, rubber and insulating shops, from the engine rooms to the offices, and in no part of that whole vast plant did I have to "look out for the dirt." There was none.

Progressive business is taking psychology into consideration more and more every day. It used to be argued that to stop work and pick up filings or shavings was a rank waste of time, or to have anyone else whose special task that should be. But all that is changed now.

A littered-up floor is bound to have a bad effect upon a workman. If he can simply throw his waste matter on the floor and be rid of it, the principle of carelessness is taught him by his employer. A slovenly workshop means a slovenly workman, and there are a great many big shops and factories which have not discovered that fact. The concentration of energy and the psychology of dirt are about equally important in results. They both cost something to take into consideration, but the dividends are going to show the difference in the end.

Even the foundry at Hawthorne was spick and span, for a foundry. Throughout the shops, dirt was collected, shavings and filings and dust all gathered up and sorted for future use, as soon as made. There was a machine for covering cable with lead, and another for stripping the lead from defective cable—rejected by the testers—at the same rate of speed.

This amazing cleanliness was the first thing that struck me, and the second came about in this wise. I was lunching in the restaurant building. The prices were easily 50 per cent. below those of an ordinary city restaurant, and the food was excellent. About me were college men and foreigners; a Japanese student, in training for special work at a Tokyo factory, a Kansas collegian, a doctor, a

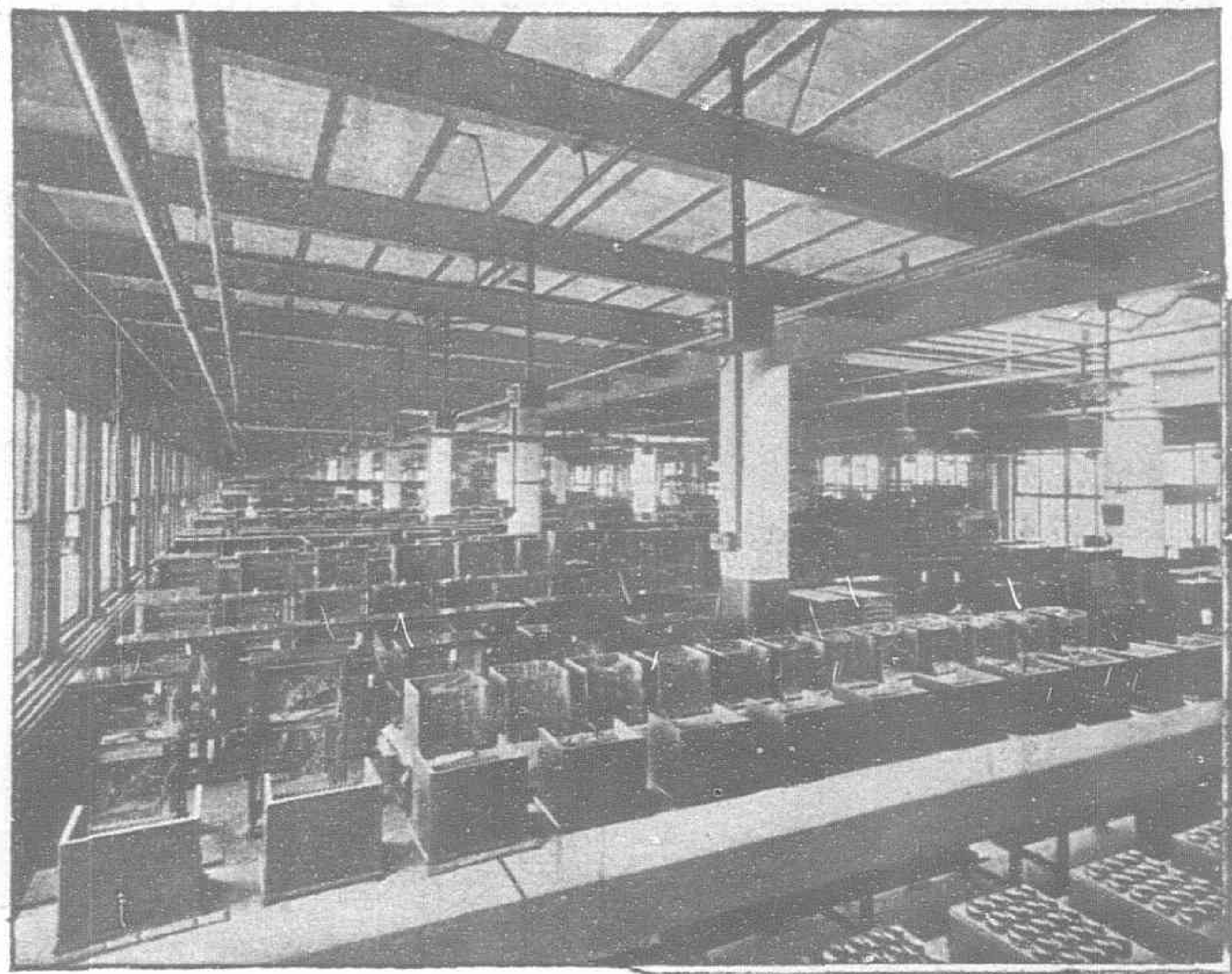


An Aisle in the Telephone and Switchboard Cord Braiding Department.

An Aisle in one of the Machine Departments—Telephone Apparatus Shops.

Yale man, all sorts and conditions of men from indentured apprentices up. My guide turned my attention from my surroundings with a jerk.

"Our great principle here," he said, "is economy in handling material. The cable shop is, say, 400 feet across. The crude rubber and wire is unloaded from the cars at one end, goes straight forward, and at the other end is loaded as cable ready for the warehouse. It always goes straight forward, and that's the same with switchboards and all the rest."



Small Switchboard Wiring Department.

"Do you mean to say," I asked, "that the raw material can go across approximately 400 feet and come out finished?"

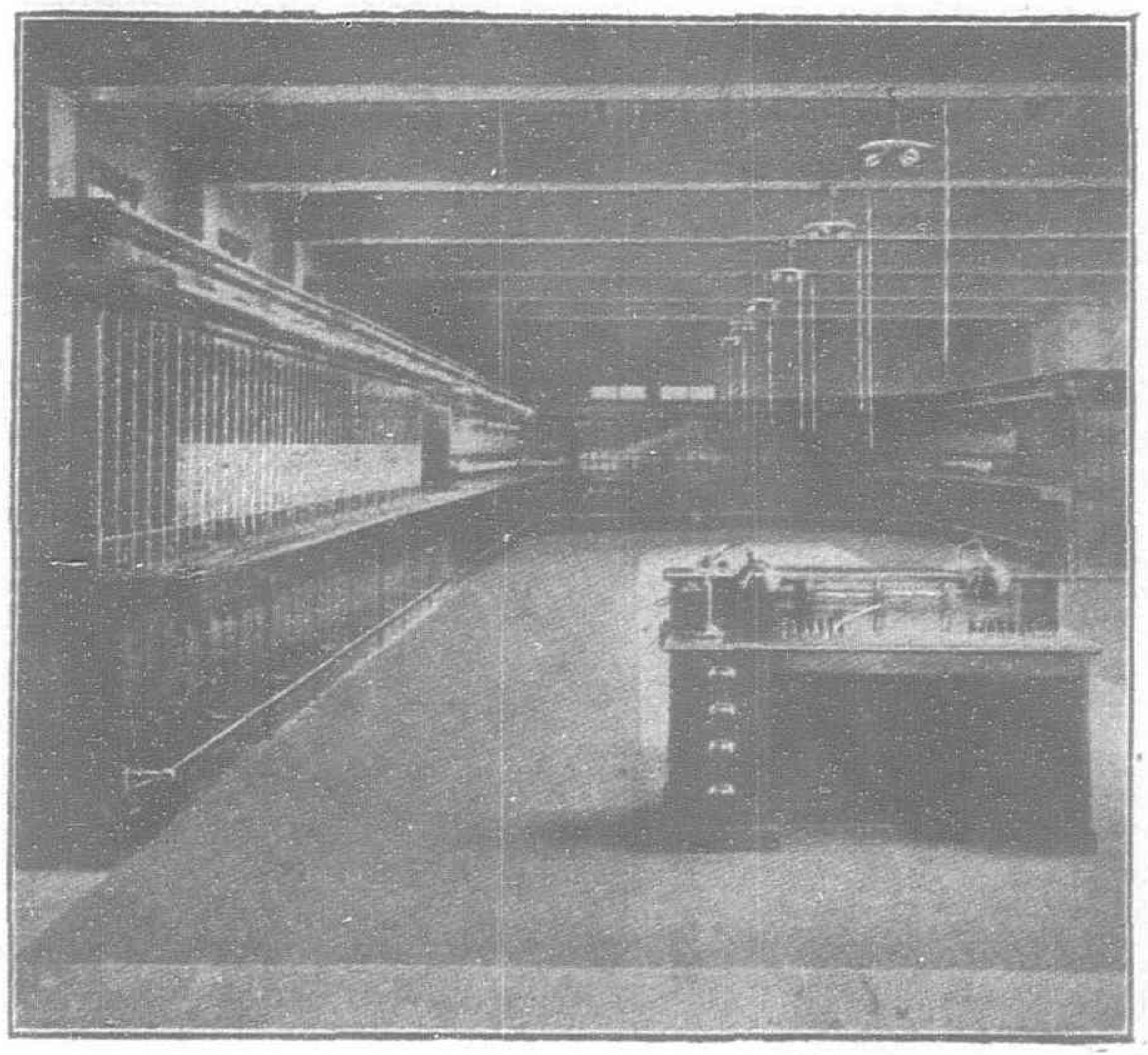
"I can show you a cable made on one floor of the building," he smiled, at which I promptly challenged him to do so, after lunch.

Now this process of cable making is interesting in the extreme, together with most other things in Hawthorne. At the east side of the shops the copper wire comes in. Each separate wire is now wound with thin paper of varying colors, whole rows of machines whirling in unison with a particularly dizzy effect to an outsider. Then, in the next room, two of these wires are twisted together, forming pairs of like color.

From here the paired wires pass to the stranding machines, which twist them into the required cable size. The largest which I saw made contained 600 pairs, of 1,200 separate wires, and as the complete number was obtained each cable received its twisted paper cover. The peculiar twist is given, no doubt, for some technical reason known to the engineers; the color of the "pairs" has a different explanation.

Should a lineman wish to reach a certain point of a laid cable, to repair an injury, he must find which wire to reach. In the outside color wrapping is inserted a key-wire of a different color, and by counting from this on down and around, the lineman can reach the required point and pick it up again a mile farther on if he wishes.

At this stage every single wire in the cable is tested, and it is then baked to remove all incidental dampness. From the ovens it goes directly to the wonderful lead presses, where the lead jacket is applied. The cable is now completed; but for submarine uses it goes through still another process where it receives coating after coating of hemp, wire and a tar preparation, which render it water and injury proof. As the cable receives its lead covering, and also as this stage is completed, it rolls upon immense spools. The traveling crane overhead carries these spools for a few feet, and the cable is aboard its car, at the western side of the shops. Thirty miles of cable a day follow this course.



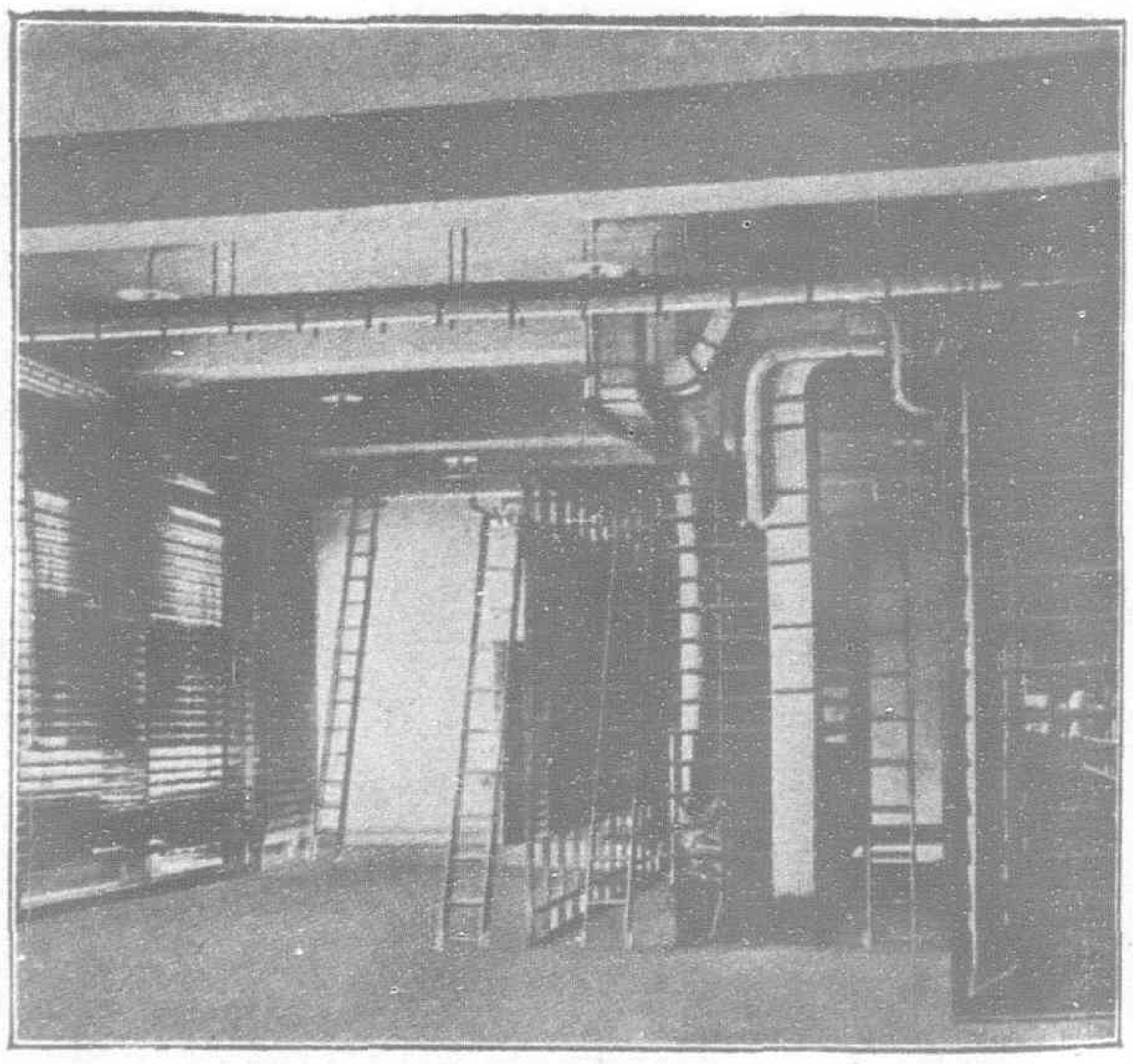
A Telephone Central Office Operating Room.

One of the Apparatus Assembly Departments.

In one room of the insulating department there are 600 girls at work wrapping the ends of switchboard cords by hand. This work demands intelligence, and these workers are of a very superior class to the ordinary factory employee. No machine has yet been invented that can do this work with complete satisfaction, but this room turns out 6,000,000 switchboard cords a year.

This remarkable efficiency in handling all material is the second great feature of the Hawthorne plant. I suppose it is the same with the other factories of the Western Electric Company, and there are many others scattered about the world. Most of the European countries where telephone and telegraph lines are owned by the governments, demand that all material used be manufactured in the country itself; so that in each of the European countries the chief factory of the Western Electric has the same scope as this at Hawthorne. And the Hawthorne plant, by the way, is the largest telephone and cable producer in the world to-day.

Again I say that "tremendous trifles" are more impressive than mere big things. Not only this, but American business is largely built upon the skillful handling of complicated detail. And there are only two ways of winning the game of worldly success. You



A Central Office Terminal Room.

must either play it better than the other fellow, or you must use marked cards; and the latter method is rapidly going out of date in this country. This care and attention to the little things, this close watch over the infinitely small no less than over the infinitely big, has revolutionized Hawthorne within the past two years.

Many of the articles of telephone construction and use go through process after process, sometimes as many as 200, and all delicate in the extreme. The great slabs of slate must be bored for the switchboards without the deviation of a millimeter; each piece of wood or metal must be passed down from machine to machine for polishing, boring and fitting; each must pass the inspectors before going to the assembling room, while through it all run the tiny threads of neatness and watchfulness. Each building has its separate clerical force, and each department its foreman; but each department is like every other, in that the visitor has before him straight lines of aisles, spotlessly clean, straight lines of men at work, straight lines of material and machines. There is no lost energy in these shops. There is plenty of room for everyone, but there is none to be wasted.

There is a double training school here. One part is devoted to the training of college men in the ways of the plant, the other is an apprenticeship for boys, who are indentured for a certain length of time. The results of this system are remarkably good. Men are developed for every possible position. Whatever they show most aptitude for is emphasized, until in time they are turned out first class men. And there is always a chance waiting. One young fellow, not yet through his course, happened to think of a simple change in making a certain mold; this change increased the output of a certain product by a third, and that young fellow found a place waiting for him on the next rung up.

Besides the nine central factories in foreign countries, there are many distributing centers. Twenty-six of these are located at strategic points in America alone. The Western Electric shops produce more telephone apparatus than any other concern, having made the 6,000,000 Bell telephones together with all telephone exchange and accessory equipment. The place is in fact a city within a city. Taking the usual average of five to one, there are 50,000 people dependent on this one factory, more than the population of the average American city!

Nor is this splendid industrial "city" a thing of chance, upgrown by the accident of time from small to large. The whole place was built upon a city plan of its own, definite and exact to the last detail, and centered about the frowning water tower.

And so we have seen Hawthorne, ah, but have we even glimpsed it? Have we had more than the tiniest of bird's-eye views? No. For behind the miles of desks and machines, behind this play of giant forces, behind this world-thing are the little heart beats of men pulsating to the ends of the world. And still farther behind these, controlling all, forcing all forward in its indomitable will, is this thing I have called the Spirit of the Machine. Perhaps it would be more rightly called the Spirit of Hawthorne; yet it is found in every such place, and the men who create it are molded by it, for better or for worse, according as they have wrought. Here at Hawthorne is realized the truth of that thunder-text, "Where there is no Vision the people perish,"—for the vision of Hawthorne is the Spirit of the Machine, the power behind the phone, and its people shall not perish.

CONDITIONS IN HUNAN

The report of the Acting British Consul at Changsha on the trade of that district during 1913, which will shortly be issued, contains some interesting information on the affairs of Hunan. It states:—

The prosperity of Hunan, in the absence of any important manufactures, is mainly dependent on its mineral deposits and its agricultural produce. As regards the latter, there is no opening under present conditions for the development of foreign trade. The crops and market produce are grown on primitive lines by small farmers who would look with disfavour on the introduction of foreign machinery and agricultural implements, which, indeed, they would not be in a position to purchase. In the matter of mining enterprises, on the other hand, the Hunanese, though of a very conservative temperament and in their clannishness opposed to admitting foreigners to a share of possible profits, have lately begun to realise that, without the adoption of foreign machinery and methods, they will be unable to do more than merely scratch at the surface of their most valuable deposits, and they fully understand that the acquisition of such machinery and foreign expert assistance is beyond their means, and that, consequently, if their mines are to be properly exploited, the introduction of foreign capital is inevitable. As an instance of this it may be mentioned that the output of the Shui-kou-shan lead and zinc mines has been pledged to a German firm for six years in return for a loan of Tls. 1,000,000 [about £150,000] without interest; a light railway brings the ore down from the mines to Sung-po, on the Siang River, where it is roughly smelted to reduce transport expenses. It is understood that the German firm in question has found this an exceedingly profitable investment, and procedure on similar lines would doubtless prove equally remunerative to United Kingdom firms. Clauses in such loan agreements place the supply of the necessary machinery in the hands of the financing party and provide for expert supervision. For such undertakings local representation in China is essential, and the sanction, of the Central and Provincial Governments must be sought and obtained. Nothing further has been done in the matter of the Changsha waterworks scheme. The subscriptions towards the necessary capital were not forthcoming, and a British company has been approached with regard to a £200,000 loan. It is doubtful, however, whether a sufficiently good security for the loan can be found. A German firm has obtained a contract for installing an up-to-date telephone service in Changsha to replace the former installation, which worked but indifferently. It is proposed to connect Changsha with Siangtan and Wuchang by telephone.

The big increase in the importation of aniline dyes and artificial indigo shows what can be done by means of travelling agents conversant with the Chinese language, the total imports of these goods having been practically quadrupled in two years, althongh political unrest and currency troubles must have hampered considerably the development of the trade in the interior. This method of pushing business in one that has been advocated for many years by H.M. Consuls in China, and has been adopted with conspicuous success by dealers in cigarettes, patent medicine, kerosene oil, sewing machines, sewing cottons, &c.

The revolution seems to have caused little or no change in the style of the dress of the natives of Hunan, except that in the large cities cloth caps and leather foot wear are fairly common: foreign singlets and socks have been in pretty general use for some years, but only the very cheapest quality of all these articles can find a market. Similarly, in the shops in Changsha there is to be seen great assortment of lamps, mirrors, combs, watches, and miscellanous bric-a-brac, all tawdry and tinselly, and all of the most inferior grade. It is not generally realised by United Kingdom manufacturers, at any rate to judge by the inquiries constantly addressed to H.M. Consuls in China, that in China, so far from being able to afford the commonest luxuries, a considerable proportion of the population can barely provide themselves with the necessities of life. Finally, without personal study of local conditions, little hope of ultimate success need be entertained. This fact has been realised by the manufacturers of and dealers in certain commodities, and they have earned good profits in consequence.

SOYA-BEAN MARKET IN MANCHURIA

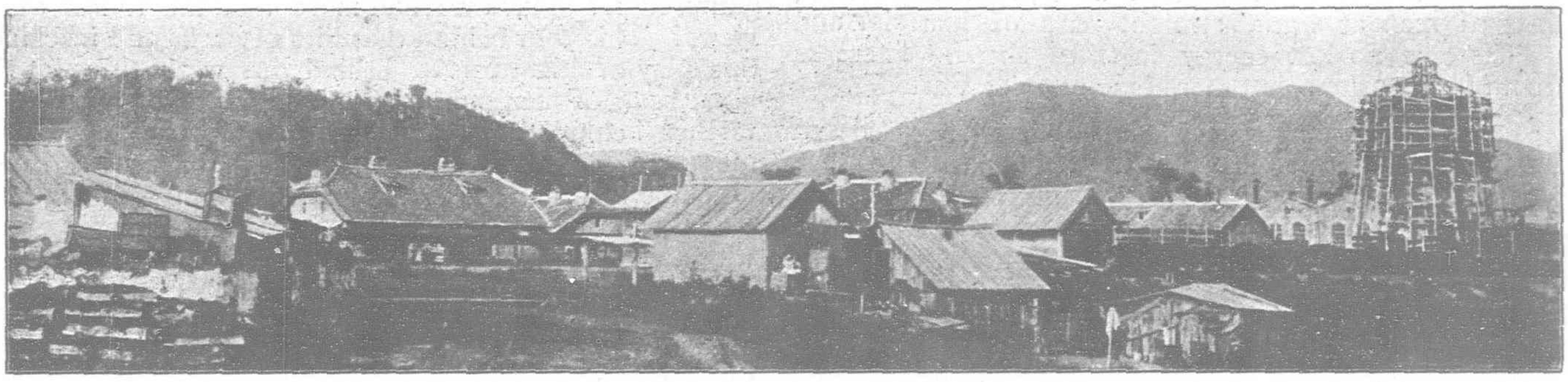
An optimistic view of the bean market, reports Mr. George C. Hanson, American Vice-Consul at Dairen, is that, owing to the comparatively unfavorable crops of last year, the stocks left inland are smaller than they are given credit for. The farmers have learned from past experience the wisdom of waiting for better prices and are in no hurry to sell. Now that the thaw is setting in the farmers will have to direct all their attention to sowing preparations and the movement of goods will necessarily become slack. The failure of crops in the northeastern district of Japan and Hokkaido, combined with the slump in the rice market, have tended to reduce the demand for bean cake. But with the return of the farming season necessity will cause demands to increase. South China must also be taken into account and a considerable market for bean cake is expected in that direction.

A pessimistic view is that the ruling price, despite its recent decline, is still higher than last year's, the mean quotation of which was $1.90 per $133\frac{1}{3}$ pounds. Most dealers seem to believe this to be due to the poor harvest of last year, which, however, is not so bad as supposed. The dealers up country are shrewdly disseminating the impression that the crops were a failure, so that they may profit by a rising market. The crops are estimated to be about 80 per cent. of the previous season, and there are accumulations of stocks at the principal stations along the South Manchuria Railway lines. Sulphate of ammonia and other fertilizers have become popular, and the demand for bean cake correspondingly lessened, especially as the price of rice has declined and necessity compels the farmer to calculate closely when selecting fertilizers. The bean crop in North Manchuria was much better than in South Manchuria. The export from Vladivostok to Europe this year reached a very low point and an outlet is looked for in Japan. It is believed that any attempt to inflate the Dairen market above its normal level will result in failure.

Recently the South Manchuria Railway's central laboratory made analyses of beans from North and South Manchuria. While the South Manchurian bean is smaller than the North Manchurian, the percentage of oil is greater than in the latter. The South Manchurian bean contains 16 to 17 per cent. of oil, as againts the 15 per cent. of oil contained in the North Manchurian bean.

OPERATIONS OF THE CHINESE EASTERN RAILWAY

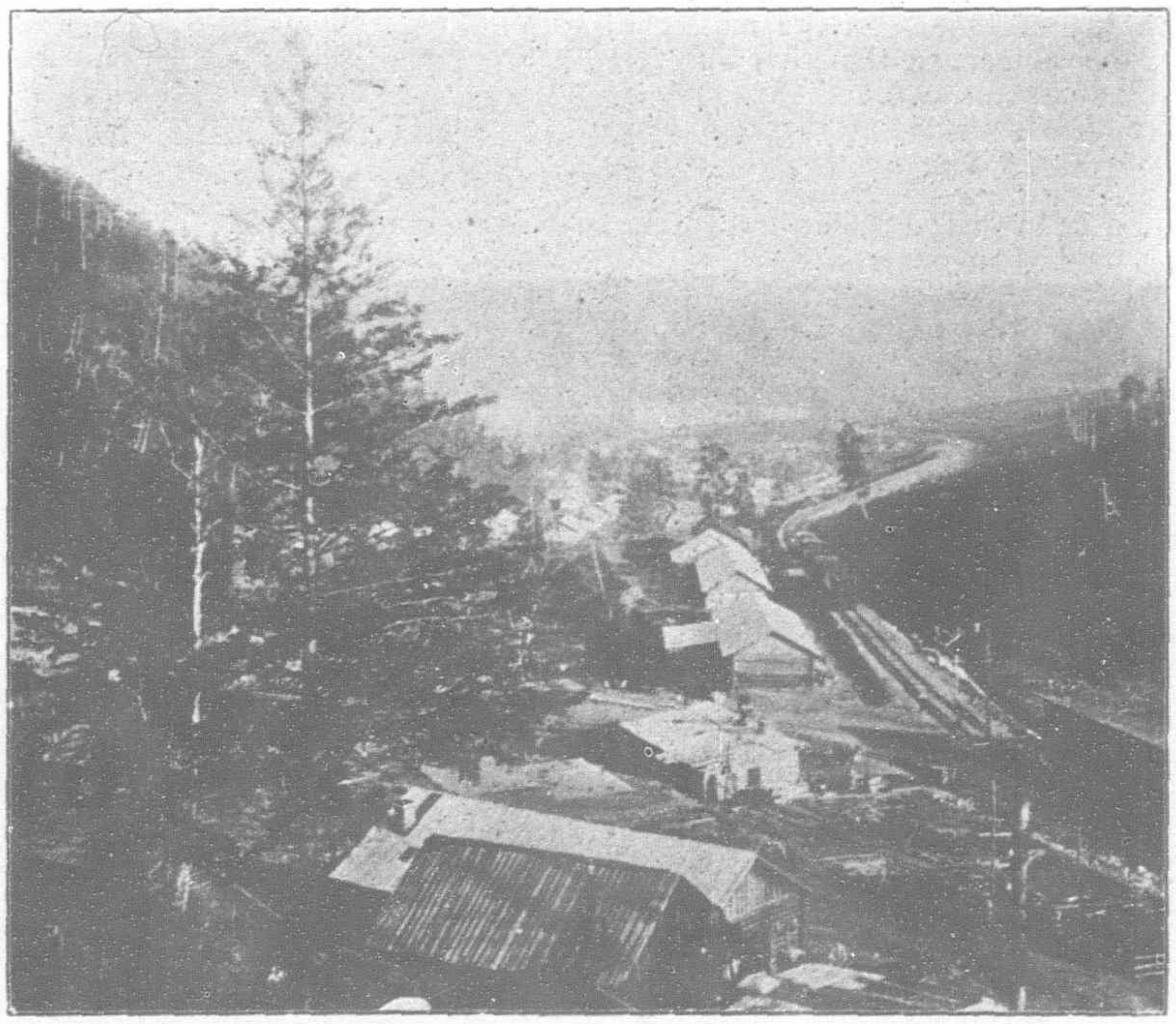
Prior to the construction of the Chinese Eastern Railway and with the exception of the Ussuri Railway, which runs north and south in the Maritime Province of Russia in Asia and connects Vladivostock and Khabarofsk, the Russian railways did not extend farther east than the Trans-Baikal Railway, writes Mr. Lester Maynard, American Consul at Harbin. Two projects were under consideration for joining these two lines, so as to place the Russian Far East in direct rail communication with the rest of the Russian Empire. One plan was to build a railway following the Amur River and connecting with the Ussuri Railway at Khabarofsk, and the alternate plan was the present Chinese Eastern Railway. At that time the proposed construction of the Amur Railway was abandoned, not alone because it was over 300 miles longer than the direct line through Manchuria and presented serious engineering difficulties, but also because Russia's policy was territorial extension in the Far East.



CHINESE EASTERN RAILWAY.—A typical station.

BUILT TO ADVANCE RUSSIAN INTERESTS IN MANCHURIA.

The construction of the Chinese Eastern Railway promised to give Russia great commercial advantages in the trade of Manchuria, Mongolia, and North China, and to make Vladivostock the seaport for North Manchuria. Arrangements were made to hand over the administration of the Ussuri Railway to the Chinese Eastern Railway upon the completion of the latter, and an effort was made to divert commerce through Vladivostock, but after the leasing of the Kwangtung Peninsula by Russia a branch line was built from Harbin, which was the administrative center of the Chinese Eastern Railway, to Port Arthur and Dairen (Dainy), and Russia's attention was then devoted to make the former city an impregnable fortress and the latter a great commercial seaport, even at the expense of Vladivostock, which was to remain principally a fortress.



CHINESE EASTERN RAILWAY.—Through the King-Han mountains.

The present site of Harbin was chosen as the headquarters of the railway on account of its location on the Sungari River, as it was recognized that this, the most important river in North Manchuria, would be the means of delivering the greatest amount of freight to the railway. The railway organized a steamship service on the Sungari, and in connection with the steamers of the Russian Volunteer Fleet, a vast network of Russian commercial influence was spread over all of North China and Manchuria.

GROWTH OF TRAFFIC SINCE RUSSO-JAPANESE WAR.

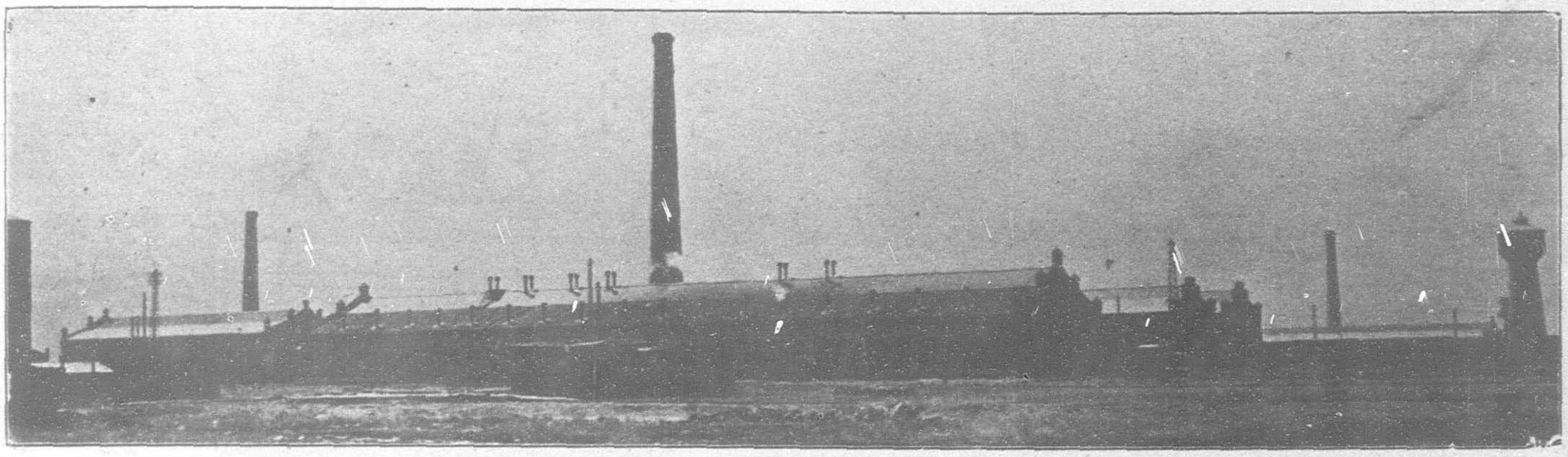
As a result of the Russo-Japanese War, the Chinese Eastern Railway's operations were confined to that part of Manchuria north of Kwangchengtzu, and attention was again directed toward the building of a great commercial seaport at Vladivostock.

The completion of the Amur Railway will undoubtedly seriously affect the operations of the Chinese Eastern Railway, and it will therefore be interesting to review the operations of the railway since the close of the Russo-Japanese War. Prior to the war the railway has not been placed in thorough running order, and its real influence on the commerce of North Manchuria was not clearly demonstrated. During the war it was given over almost entirely to military use, and therefore the following review starts with the year 1906, although normal facilities were not fully established until 1907.

The movement of slow commercial freight in all directions on the Chinese Eastern Railway for the seven years from 1906 to 1912, inclusive, stated in tons of 2,000 pounds was as follows:—1906, 452,395 tons; 1907, 482,228 tons; 1908. 596,490 tons; 1909, 798,343 tons; 1910, 1,032,103 tons; 1911, 1,336,936 tons; and 1912, 1,218,290 tons.

FREIGHT TRAFFIC ANALYZED.

In the earlier years local freight represented almost half of the total freight hauled, but the rapid increase in the exportation of soya beans resulted in a great increase of export freight to the Ussuri Railway; in other words, to Vladivostock for shipment abroad. In 1908 this traffic almost equaled the amount of local freight, and in 1909 the exports to the Ussuri Railway were more than double the amount of local freight. In 1910 the same conditions prevailed, and in 1911 the amount increased to almost three times that of the local freight. In 1912 the local and export freight to the Ussuri came nearer together, owing to a heavy gain by the former and a decrease in the latter. The other items of export show a steady increase, the most noteworthy being shipments to the South Manchuria Railway. On the other hand, the amount of local freight shows a very slight increase, except in 1912, and in some years, notably in 1909, fell below the first year.

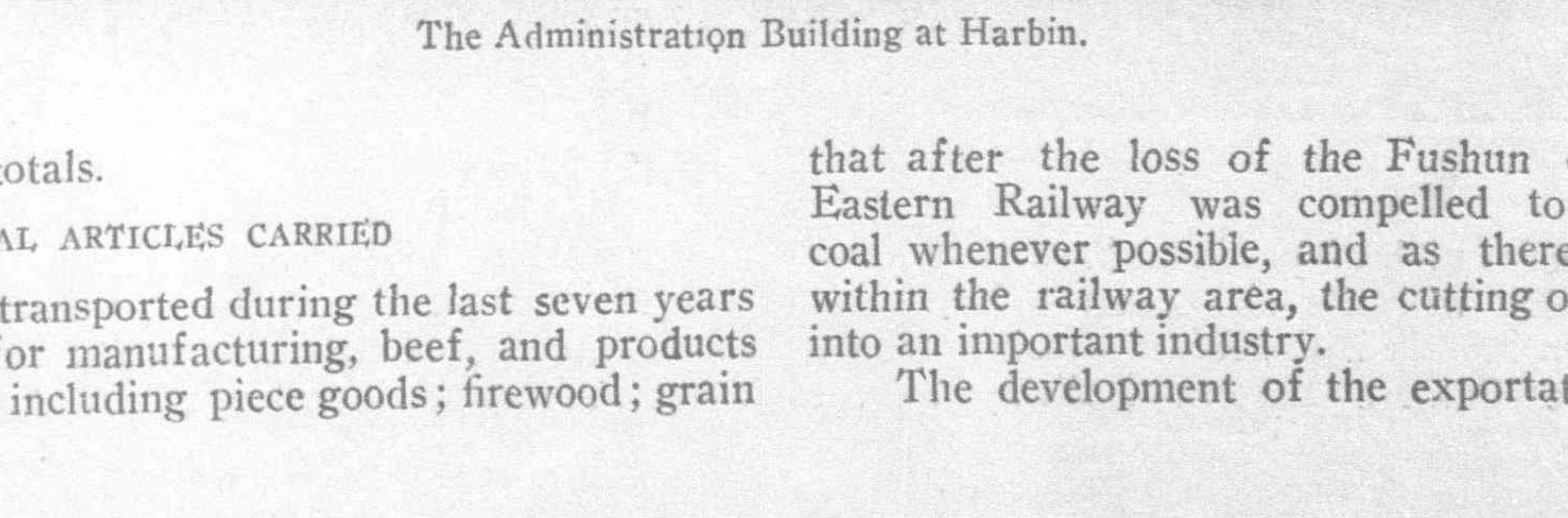


CHINESE EASTERN RAILWAY.—Railway Cars Shops at Harbin.

Import freight from both the Ussuri and Trans-Baikal Railways shows a gradual decrease, and the imports from the South Manchuria Railway a rapid increase up to 1912, indicating that Dairen (Dalny) has been getting the import business of North Manchuria at the expense of Vladivostock. In 1912 the import freight from the Ussuri Railway showed a slight gain, and that from the Trans-Baikal a heavy gain, while the freight from the South Manchuria dropped more than 100,000 tons.

CHINESE EASTERN RAILWAY.—Another typical station.

As in the case of local freight, the transit freight shows but slight change. A general survey of the figures would indicate that although the totals show a gradual and substantial increase in the amount of freight hauled by the railway during the first six years under review, the increases are almost entirely due to the shipments of soya beans, which in 1911 represented about 50 per cent. of the total traffic. In 1912 the exportation of beans was hampered by local disturbances and a weak market.



The Administration Building at Harbin.

The figures for 1911 differ slightly from the corresponding figures submitted with the annual report of this consulate for the calendar year 1911. The railway officials state that statistics given at an early date are liable to alteration, and this was the case with the figures supplied in the early part of 1912. The differences, however, are slight, and do not materially change the totals.

PRINCIPAL ARTICLES CARRIED

The principal articles transported during the last seven years were bags and material for manufacturing, beef, and products of, beef; coal; dry goods, including piece goods; firewood; grain of all kinds, including soya beans; kerosene; lumber and timber, salt; sugar, and tea.

GRAIN AND SOYA BEANS FORM BULK OF FREIGHT

Grain of all kinds and soya beans have been from the beginning of the operation of the Chinese Eastern Railway the principal articles hauled and have shown great increases each year.

Taking the exports separately, it is found that the exports to Vladivostock greatly predominate. Almost the entire amount is intended for export abroad. Owing to the introduction of the customs tariff for eastern Siberia in the early part of 1909, the shipments of flour fell off greatly, whereas wheat imports, which continued to enter duty free, increased in order to supply the mills in the Maritime Province. The shipments of wheat in 1911 were far below normal on account of the shortage of crops.

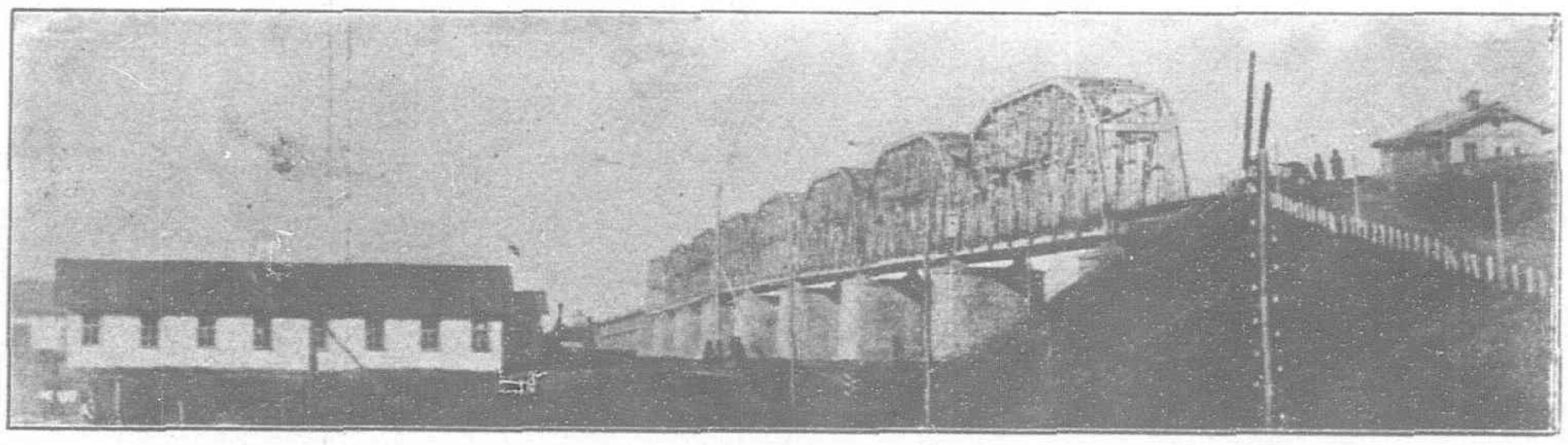
COAL, FIREWOOD, AND TIMBER MOVEMENTS

The principal hauling of coal is from the Fushun coal mine of South Manchuria. Formerly this mine was within the area of the Chinese Eastern Railway, and the mine was worked to obtain fuel for the railway, but after the Russo-Japanese War that section of the railway and the coal mine fell into the hands of the Japanese.

The only mine of consequence remaining in the hands of the Chinese Eastern Railway is located at Djalainor to the west of Harbin. This mine is leased by the railway, and produces about 18,000 tons of coal per month, of which 12,000 tons are used by the railway, the remainder being sold to the public.

Practically the only movement of firewood is in local freight. This is due to the fact that after the loss of the Fushun coal mine, the Chinese Eastern Railway was compelled to substitute firewood for coal whenever possible, and as there are numerous forests within the railway area, the cutting of firewood soon developed into an important industry.

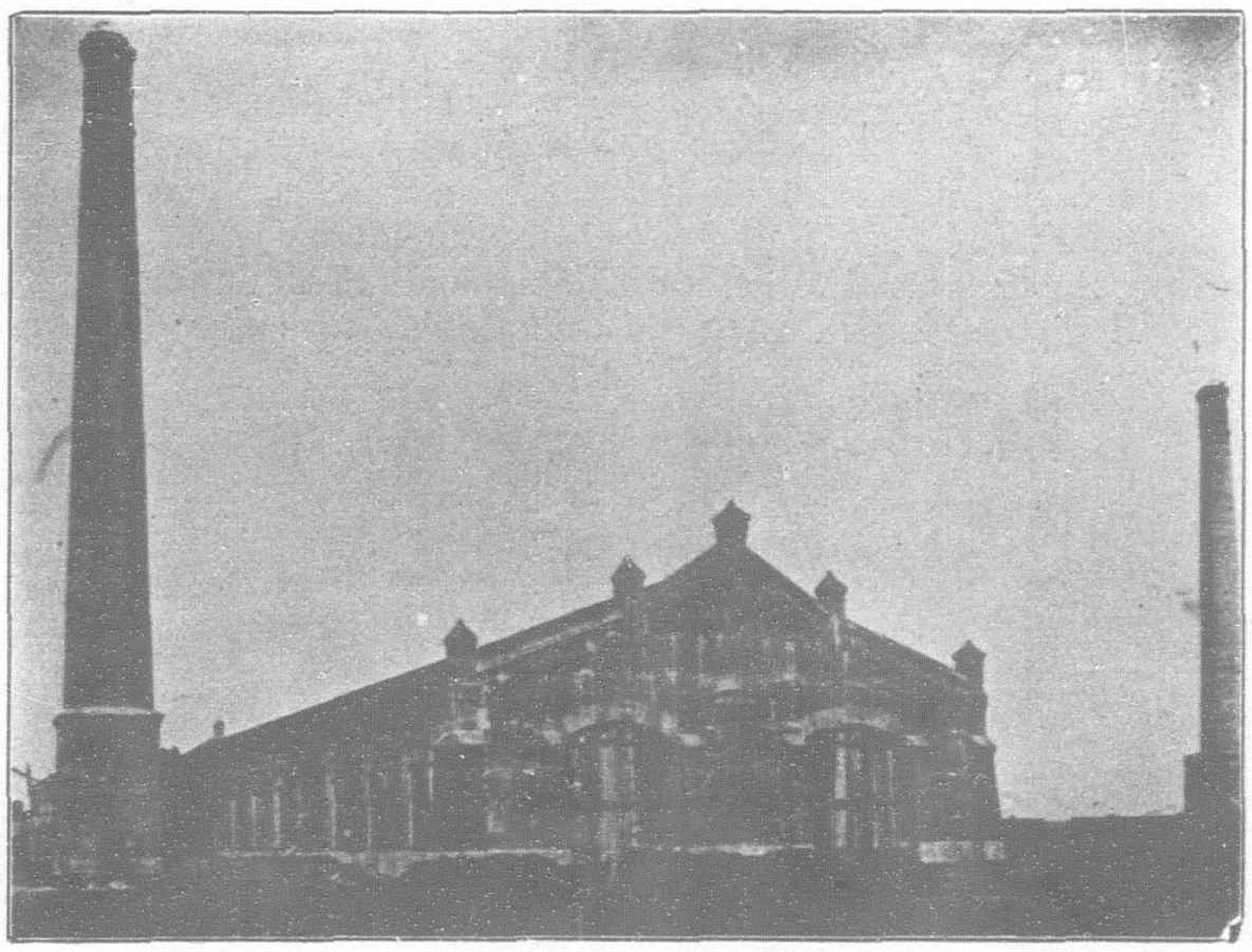
The development of the exportation of lumber and timber from North Manchuria has not been greatly encouraged, and no serious effort to find markets abroad has been made. Prior to the establishment of customhouses and the erection of sawmills in Eastern Siberia, shipments were made from North Manchuria, but these fell off greatly during 1908. This forced the North Manchurian timber merchants to seek new markets, with the result that shipments to South Manchuria and abroad rapidly developed.



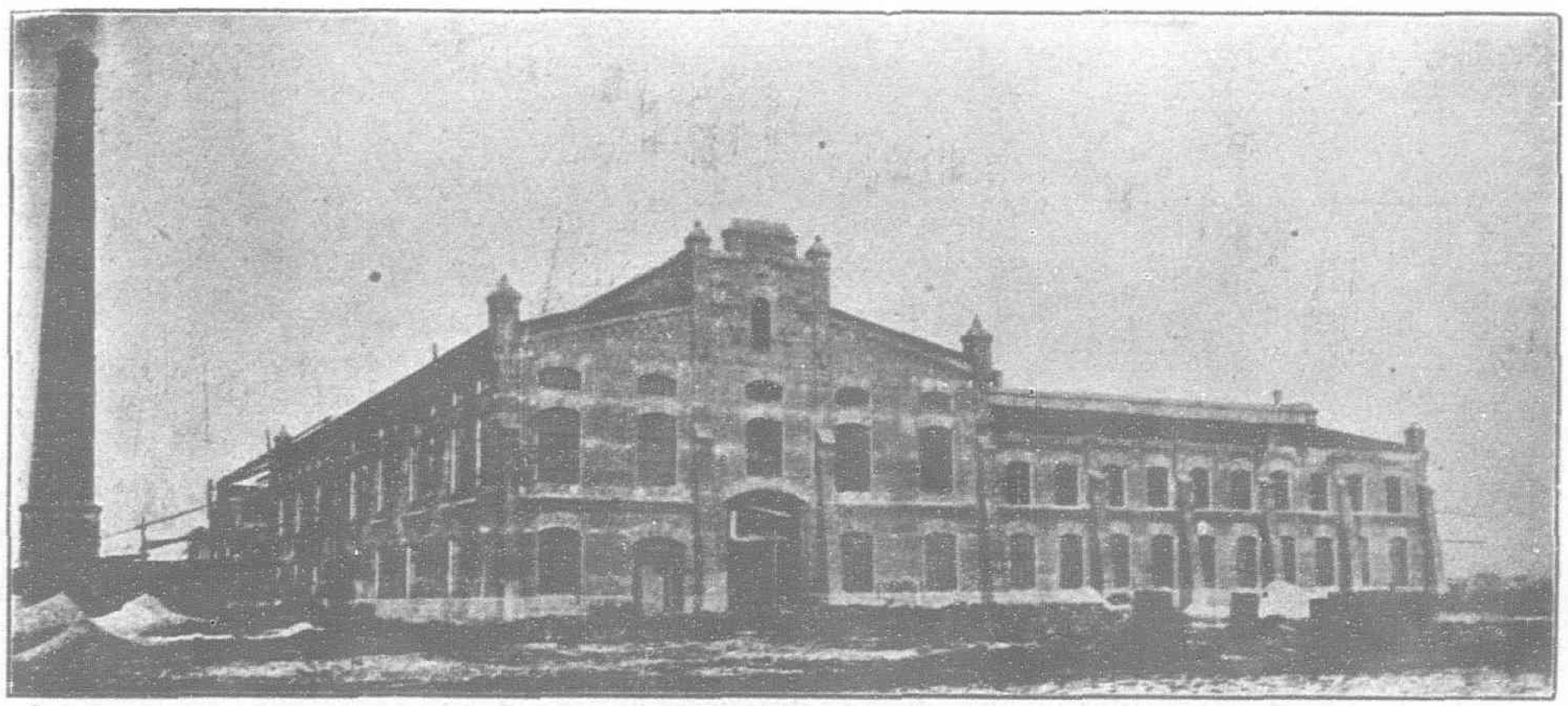
CHINESE EASTERN RAILWAY.—The bridge over the Sungari at Harbin.

DISCRIMINATING RATES FAVOR RUSSIAN KEROSENE

Russian kerosene is shipped by sea to Vladivostock, where it is loaded in tank cars for distribution throughout the Russian Far East and North Manchuria. In order to encourage and assist the sale of Russian kerosene in competition with that from other countries, the Chinese Eastern Railway has arranged its freight tariff in such a way as to discriminate against non-Russian kerosene. They are enabled to do this, as foreign kerosene entering Russian territory must pay heavy import duty, as well as an excise tax, and can not be shipped in transit without paying this double toll. For this reason all non-Russian oil must enter North Manchuria from the south via Kwangchengtzu and pay a much higher rate of freight to points in North Manchuria than Russian oil would pay when shipped in the opposite direction. Russian oil may take advantage of the Vladivostock route and is exempt from import duty. In addition to this discrimination in freight rates, the railway has prepared a special tariff from Russian centers to North Manchuria in an effort to hold this market for Russian oil. The amount of American kerosene imported via Kwangchengtzu suddenly increased and passed the Russian importations in 1910, but showed a decrease to the Russian increase in 1911. In spite of the heavy freight handicap, American oil, by its superiority, finds a ready sale, although at times the prices are higher than Russian oil, and the small shipments in transit from the Ussuri to the South Manchuria Railway indicate that with the advantage of low freight rates the Russian oil is unable to compete with American oil in the south. By arrangement, American kerosene in given the North Manchurian market, and has only Russian oil to compete with.



CHINESE EASTERN RAILWAY.—Machine shops at Harbin.



CHINESE EASTERN RAILWAY.—Railway shops at Harbin.

BEEF SHIPMENTS—PIECE GOODS

The shipments of beef and beef products have shown but small fluctuation. Mongolia, with its rich pasture lands and large herds supplies Eastern Siberia with beef, a certain quantity of which passes over the Chinese Eastern Railway to the Maritime Province, but the bulk of the shipments are delivered by river in summer and on the hoof in winter. In 1911 and 1912 the figures show increases, which are accounted for by the crop failures of Western Siberia and the necessity of disposing of live stock, which resulted in transit shipments from the Trans-Baikal Railway to the Ussuri Railway.

Piece goods are principally imported into North Manchuria via Kwangchengtzu, and therefore appear in the railway statistics as imports from the South Manchuria Railway. The railway authorities estimate that 75 per cent. of the imports of dry goods, including piece goods, consist of coarse cotton piece goods. These they divide according to nationality as follows: Chinese, 54 per cent.; Japanese, 30 per cent.; American, 16 per cent.

This estimate appears to be greatly exaggerated in favor of Chinese piece goods, which during the years under review were imported in relatively small quantities. Japanese piece goods should take the first place with over 50 per cent. of the total, whereas American piece goods would represent 30 per cent., and Chinese and British would divide the remainder in the order named. Manufactures of cotton, woollen, and silk make up nearly all of such shipments.

TEA SHIPMENTS IMPORTANT—TRAFFIC AND REVENUE.

Tea shipments take fourth place in volume in the traffic of the Chinese Eastern Railway and provide a large part of the railway's revenue, the rate being the highest on the freight schedule. Tea makes up about95 per cent. of the transit freight handled and provides return freight for the cars used to carry grain to Vladivostock, the other westbound traffic taking only a small portion of the empty cars available at that port. Practically all of this traffic will be lost to the Amur Railway when that line is completed. Prior to the Russo-Japanese War tea shipments came via Dalny. During 1904 and 1905 the war caused complete suspension of this trade, which was revived in 1906. About 72 per cent. of the tea imported into Vladivostock comes from China and the remainder from Ceylon, India, and Java. The imports are about equally divided between brick and leaf tea, consisting in 1910 of 30,982 tons of leaf tea and 28,406 tons of brick tea.

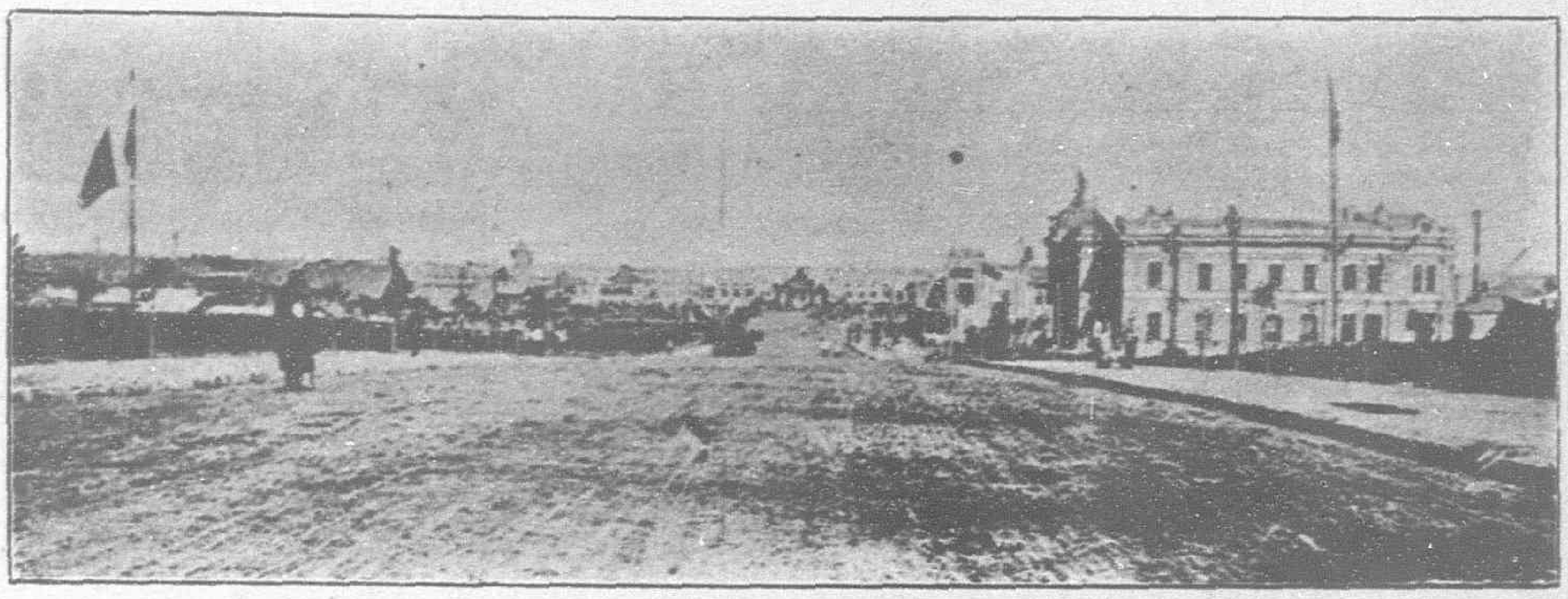
The freight and passenger traffic and gross revenue of the Chinese Eastern Railway in 1911 and 1912 were as follows:—1911: Passengers (including military) 1,208,953, freight 3,465,368 tons, revenue $10,016,540; 1912: passengers (including military) 1,639,288, freight 2,699,224 tons, revenue $11,705,235.

SALT AND SUGAR FREIGHTS.

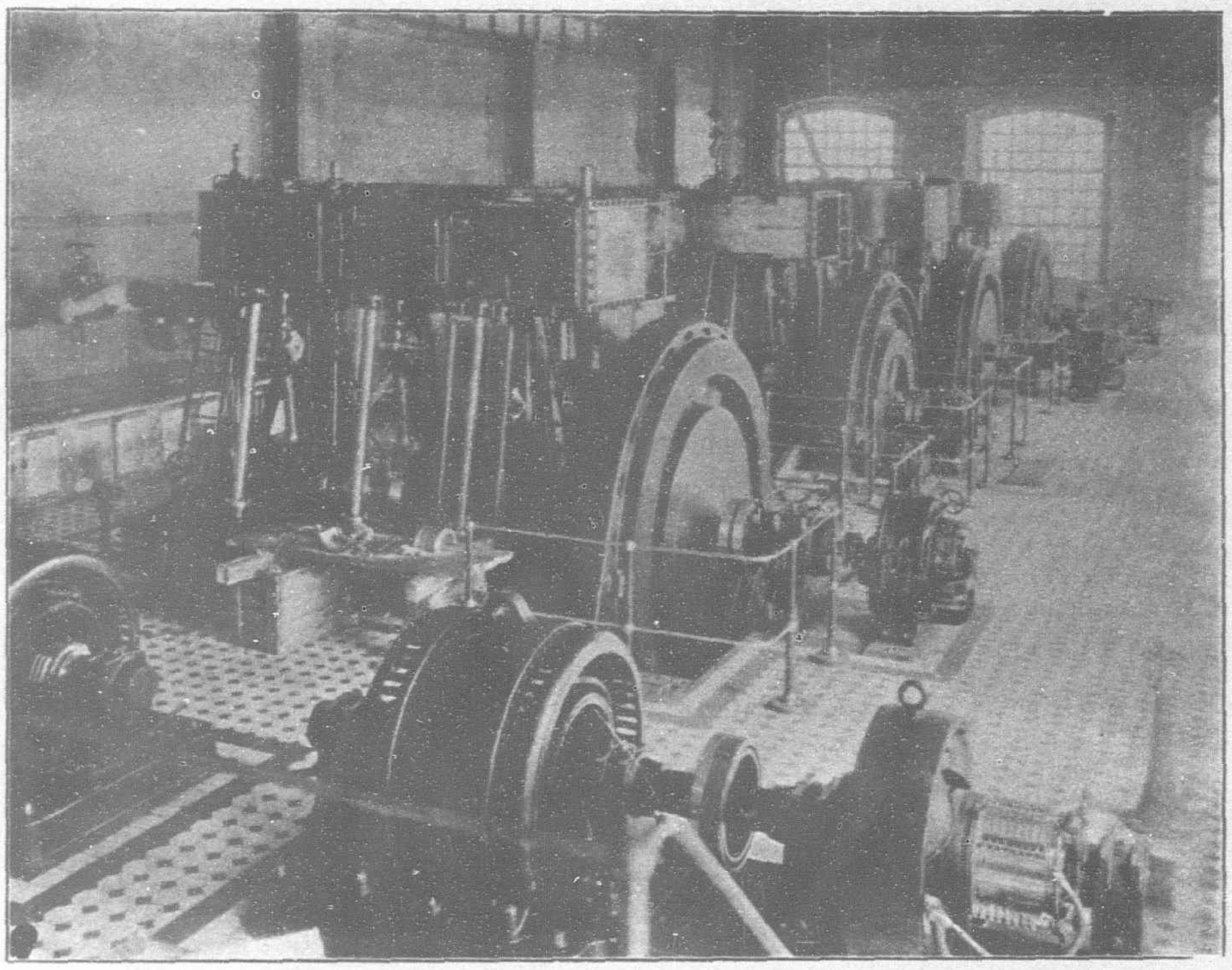
Salt, which is an important item in the freight of the Chinese Eastern Railway, is principally imported via Vladivostock. In 1906, the amount handled by the railway was large, as the stocks of salt had become greatly depleted during the Russo-Japanese War, and were replenished during that year. The increases in later years are due to the agreement between the Chinese Eastern Railway and the Heilungchiang and Kirin provincial officials to deliver salt to the Chinese salt monopoly via the port of Vladivostock.

Prior to the building of a sugar factory at Ashiho, North Manchuria depended upon European Russia for sugar, and the principal imports were direct by rail and by sea through Vladivostock. The shipments by sea could be laid down much cheaper, and this brought the rail importations practically to an end in 1909. The consuming power, however, greatly increased, and although a sugar factory was started, it was nevertheless found possible to import Hongkong and Chinese sugar via the South Manchuria Railway, and these importations have gradually increased.

The imports of Russian sugar were 3,187 tons in 1908, 6,146 tons in 1909, 2,396 tons in 1910, and 2,409 tons in 1911. Those of Hongkong sugar totaled 5,240 tons in 1908, 8,461 tons in 1909, 7,274 tons in 1910, and 10,459 tons in 1911.



A Street in Harbin.



Electric Light and Power Station at Harbin. The Generating Room.

OIL-TIN FACTORY IN MANCHURIA

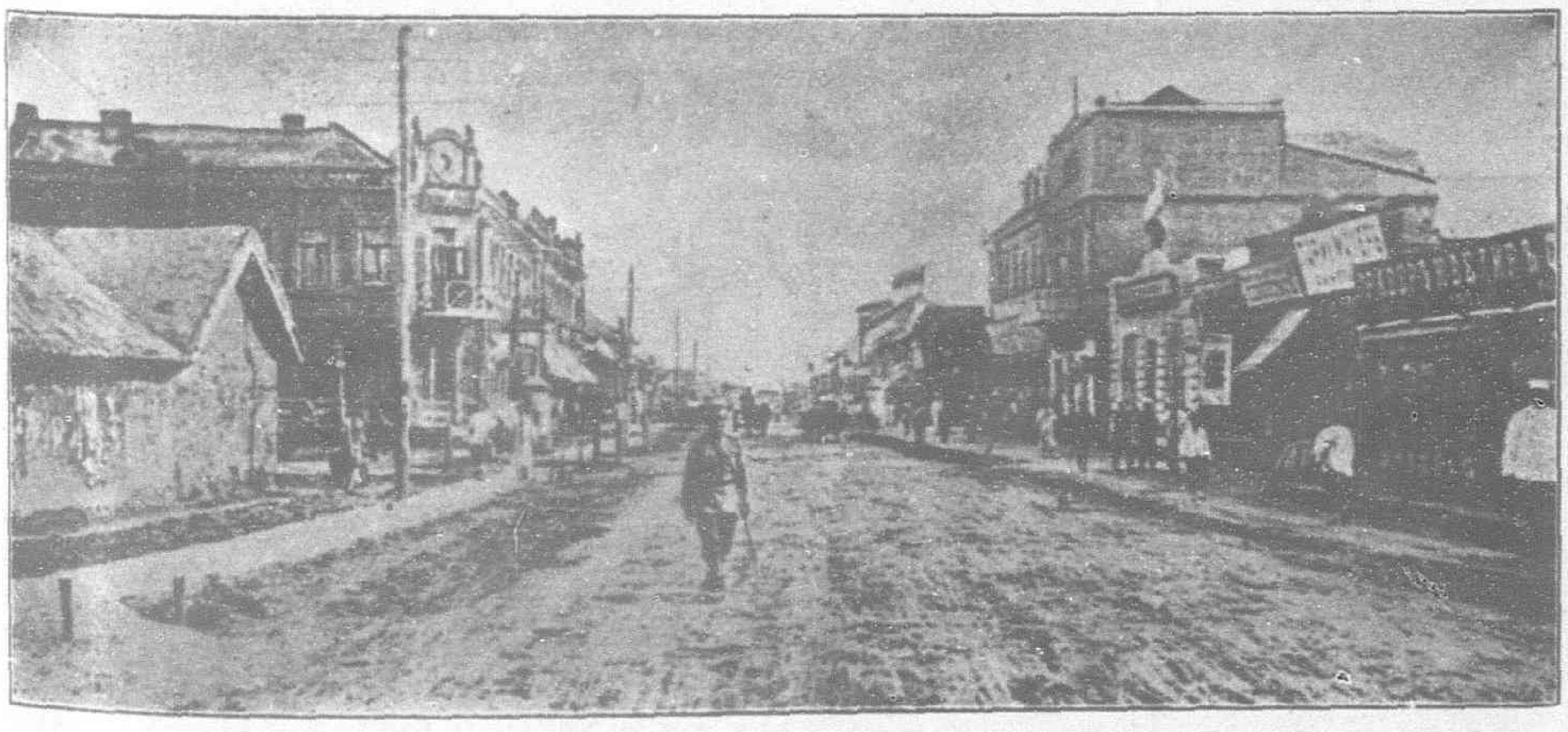
An oil-tin factory has been established at Dairen by the Manchuria Manufacturing Co. for manufacturing cans in which to export oils. It is an unincorporated partnership concern, composed of two Americans and one Russian. The present plant employs 1 Japanese as chief engineer and 17 Chinese in the factory and operates by electric motor 8 can-making machines purchased at Mount Vernon, N. Y. Its capacity is 45,000 cans per month, which will be increased to 90,000 cans per month when the size of the plant is doubled, as is planned, in May, 1914.

The product consists of the standard size and shape kerosene can and is being sold at 12½ cents (U. S. currency) each. At present the cost of producing one tin can not be definitely stated, but it is estimated that with the doubled plant running at full capacity without interruption the cost per unit should be 8 per cent. less than the present selling price. The tins are for the most part sold in Dairen.

The raw materials, consisting of tin, tin plate, galvanized wire, lead, and acid, are imported from Europe.

The factory was designed primarily to supply exporters of soyabean oil with a new, clean, and convenient package for such oil. Exporters have heretofore been using second-hand tins, drums, and barrels—the last two not being so popular as the tins—in which most of the oil from Dairen is shipped. Owing to the cheapness of second-hand tins, considerable difficulty is being found in introducing the new container, but the company hopes eventually to be able to replace the old tins by the new. The factors in favor of the latter are: The supply can be made constant, prices can be steadily maintained, large stocks of new tins can always be available for rush orders, leakage is avoided to a greater extent, and the contents of the new are cleaner and in better condition generally than oil in second-hand tins.

As bean oil exports from Dairen are increasing the prospects of success are good.



Typical Street scene in Harbin.

It is reported that the Chinese Government will appoint Commercial Attachés to the Ministries in Berlin, London, Paris, St. Petersburg, Washington and Tokyo.

The *Shuntien Shih Pao*, a Peking papers reports that American capitalists have proposed, that the Government should establish ironworks at Hanyang for the purpose of exporting pigiron to America.

FAR EASTERN RAILWAYS

CHINA

Shantung Railway.—A Berlin telegram dated May 18 states that the Shantung Railway receipts in 1913 amounted to Mks. 4.130,000 and the expenses to Mks. 1,190,000, as compared with Mks. 4,130,000 and Mks. 1,170,000 respectively in 1912. The car agreement with the Tientsin-Pukow Railway has been successful and furthered the production of coal, which amounted to 612,201 tons in 1913 against 413,033 in 1912. The prospects of the sale of coal are as favourable as they were last year.

Peking-Hankow Line.—A German telegram says:—The main points of the draft of the second loan which the Ministry of Communication is said to have closed for the Peking-Hankow Railway with American, English and other European capitalists, as follows: The amount of the loan is twenty million dollars in bonds of one hundred dollars each. Interest is paid at seven per cent. It runs for twenty years. Amortization will be commenced from the eleventh year. The income of the railway is pledged as security for the loan.

Hangchow-Ningpo Railway.—The Chinese newspapers report that the Ministry of Communications has decided to erect a bridge across the West Lake at Hangchow in order to join the lines of the Hangchow and Ningpo railways. According to an estimate the cost will be $500,000 and the bridge will be completed in eight months. The shareholders of the Chekiang Railway Company will hold another meeting on June 5 to discuss the matter of redeeming the property of the company by the Central Government. The Ministry of Communications has already appointed a deputy to manage the business of the company. The contract for the construction of the iron bridge will be signed shortly.

Yuet-Han Railway.—At a recent meeting of the Shareholders of the Yuet-Han Railway (the Kwangtung section of the Canton-Hankow Railway) the election was held to select a Managing Director of the line. Mr. Liang Ching-kwai secured the position with 60,000 votes, Mr, Jeme Tien-yu having the second highest number. Mr. Liang Ching-kwai therefore becomes the new Managing Director.

Shanghai Nanking-Railway—The following figures of traffic returns (approximately) for the week ended April 18 are issued by the Shanghai-Nanking Railway:—

Year.	Passengers.	Goods & Sundries.	Total for the week.
	$	$	$
1914....	54,387	12,889	67,276
1913....	52,005	11,977	63,982
Increase.	2,382	912	3,294
Decrease	—	—	—

For forty-two weeks.

Year.	Passengers.	Goods & Sundries	Total
	$	$	$
1914....	2,025,220	426,009	2,451,220
1913....	1,809,648	350,025	2,204,673
Increase.	215,572	30,984	246,556
Decrease	—	—	—

Week ended April 25.

Year.	Passengers.	Goods & Sundries.	Total for the week.
	$	$	$
1914....	49,633	12,029	61,662
1913....	43,716	10,119	53,835
Increase.	5,917	1,910	7,827
Decrease	—	—	—

For forty-three weeks.

Year.	Passengers.	Goods & Sundries.	Total.
	$	$	$
1914....	2,074,853	438,038	2,512,891
1913....	1,853,364	405,144	2,258,508
Increase	221,489	32,894	254,383
Decrease	—	—	—

Week ended May 2.

Year.	Passengers.	Goods & Sundries	Total for the week.
	$	$	$
1914....	48,334	9,085	57,419
1913....	44,446	10,359	54,805
Increase.	3,888	—	2,614
Decrease	—	1,274	—

For forty-four weeks.

Year.	Passengers.	Goods & Sundries	Total
	$	$	$
1914....	2,123,187	447,123	2,570,310
1913....	1,897,810	415,503	2,313,313
Increase.	225,377	31,620	256,997
Decrease	—	—	—

Week ended May 9.

Year.	Passengers.	Goods & Sundries.	Total for the week.
	$	$	$
1914....	54,479	11,778	66,257
1913....	52,626	9,302	61,928
Increase.	1,853	2,476	4,329
Decrease	—	—	—

For forty-five weeks.

Year.	Passengers.	Goods & Sundries.	Total.
	$	$	$
1914....	2,177,666	458,901	2,636,567
1913....	1,950,436	424,805	2,375,241
Increase.	227,230	34,096	261,326
Decrease	—	—	—

Week ended May 16.

Year.	Passengers.	Goods & Sundries	Total for the week.
	$	$	$
1914....	49,715	11,851	61,566
1913....	48,356	9,456	57,812
Increase.	1,359	2,395	3,754
Decrease	—	—	—

For forty-six weeks.

Year.	Passengers.	Goods & Sundries	Total
	$	$	$
1914....	2,227,381	470,752	2,698,133
1913....	1,998,792	434,261	2,433,053
Increase.	228,589	36,491	265,080
Decrease	—	—	—

JAPAN

Railway Construction Plans—How far the railway construction programme is to be carried out during the current fiscal year is still a pending question in the Imperial Railway Board as the Board changed its chief while negotiations as to the means and ways of railway financing during the current year were still pending between the Board and the Finance Department. If the original plan of the Board is to be carried out without being modified as a result of the negotiations with the Finance authorities, lines with a total mileage of 223 miles 75 chains will be completed during the year.

Details are as follows:

Lines	Sections	Mileage.	Date of C'pletion.
Hokkaido	Yubutsu...Rubeshibe-Shimoutabara	19.40	Sept. 1914
Hokkaido	Soya...Onishibu-Kotombetsu	9.59	Oct. 1914
Hokkaido	Manji...Shibun-Manji	14.70	Nov. 1914
Shinjo	Furukuchi-Kiyokawa	8.59	June 1914
Shinjo	Kiyokawa-Awarume	7.34	Aug. 1914
Shinjo...	Awarume-Sakata...	9.15	Dec. 1914
Taira...	Koiiyama-Miharu ...	7.65	Aug. 1914
Taira...	Taira-Onoshinmachi	20.69	Feb. 1915
Taira...	Taira-Nishiogawa ...	6.18	Feb. 1915
Murakami ...	Shibata-Chujo	8.10	June 1914
Murakami	Chujo-Murakami	12.50	Nov. 1914
Ganyetsu	Nozawa-Tsugawa	15.79	Oct. 1914
Miyazaki ...	Mitsumata-Yawanokuchi	3.37	Aug. 1914
Miyazaki ...	Miyazaki-Akaye	1.94	Jan. 1915
Miyazaki ...	Akaye-Kiyotake	3.22	Jan. 1915
Sendai ...	Kushikino-Sendai	7.33	June 1914
Hojo...	Kisarazu-Minato ...	13.48	Jan. 1915
Miyachi (light)	Kumamoto-Otsu	12.76	June 1914
Nagai (light)	Nashigo-Nagai	7.11	Oct. 1914
Fukagawa (light)	Nita-Wakimoto	5.22	Oct. 1914
Total		196.64	

To this total are to be added those lines already completed and opened to traffic.

They are:—

Lines	Sections	Mileage.	Date of C'pletion.
Sayegi...	Oita-Yozaki	11.33	April 1
Inukai...	Oita-Nakahanda ...	6.79	April 1
Shinjo...	Iwade-Kawawatari	8.62	April 19

The construction expenses of these lines are estimated at 1,300,000 *yen*.

Between Japan and China.—In October last, the Japanese Imperial Government Railways opened a through traffic arrangement between Japan and China by rail via Korea, and have since been operating the through booking of passengers and luggage from principal stations on the Tokaido, Sanyo, and Kyushu Lines to Peking and Tientsin, and *vice versa*. On account of the improvements introduced to the train services on the Korean, the South Manchuria, and the Chinese Peking-Mukden Line on May 1st, the through connections have been increased and the length of journeys shortened, to the immense advantage of through passengers. Formerly, when proceeding by daily connections from Japan to China, passengers have had to stop overnight at Mukden and Shanhaikuan, spending 5 days 4 hours on the journey from Tokyo to Peking, but now a stop-over is necessary only at Shanhaikuan, thus shortening the time spent to just over four days. Furthermore, up to the present month through connections necessitated a stop-over at Mukden and were once weekly, while according to the new timetable, through services are thrice weekly and without any stop-over *en route*, as follows:—

LEAVE.				
Shimbashi..	Tues. & Sat.	8.30 a.m.	Tues.	3.50 p.m.
Hiranuma..	,, ,,	9.06 ,,	,,	4.36 ,,
Osaka......	,, ,,	8.33 p.m.	Wed.	6.38 a.m.
Kobe	,, ,,	9.22 ,,	,,	7.32 ,,
ARRIVE.				
Tientsin....	Sat. & Wed.	5.03 a.m.	Sat.	6.41 p.m.
Peking	,, ,,	8.45 ,,	,,	9.43 ,,

Shikizan Cable Railway Co.—A charter has been granted by the State Railway Board to the Shikizan Cable Railway Company for the construction of a cable railroad between Sano and Tochino, Ikomagun, Naraken. The proposed line will be 1 mile and 29 chains in length and will cost 200,000 *yen*.

Extension of Existing Lines.—The Imperial Japanese Railway Board has decided to investigate with a view to extending the railways, 303 miles in various parts of the country during the current year.

The following is the program the Railway Board has decided to undertake;

	Miles
IN THE NORTH-EASTERN DISTRICTS	
Between Omagari and Morioka	47
Between Yamagata and Tazawa by way of Sawukawa and Etami	19
Between Noheji and Ominato	38
Between Kawabe and Kizukuri	17
IN THE SAN-IN DISTRICTS	
Between Tottori and Chizu...	20
Between Yonago and Neame	19
IN SHIKOKU	
Between Yamada, Kochi and Susaki... ...	24
IN HOKKAIDO	
Between Uda and Rumoe	9
Between Otokoshi and Futaneuchi	87
NEAR TOKYO	
Between Katsuta and Omiya	13

New Rolling Stock.—The new rolling stock to be constructed by the Imperial Japanese Government Railways during the current fiscal year comprises 109 locomotives, 94 tenders, 207 passenger cars, and 1,693 goods cars.

New Light Railways.—On May 4, charters were granted by the Imperial Japanese Railway Board to four railway companies for the construction of light railways in Chiba-ken and Okayama-ken. The first of these companies, the Katori Railway Company, proposes to lay a steam light railway, gauge 3.6 feet, between Omigawa and Sawara, important commerical centres in Chiba prefecture. The proposed line is 7 miles 30 chains in length and costs 330,000 *yen*. The second is the Hokuso railway company which proposes to construct a light railway, gauge 3.6 feet, in the same prefecture, with a capital of a million *yen*. The proposed line, twenty miles in length, connecting Kinoshita with Urayasu, runs through Chiba prefecture crosswise. The Tobi Light Railway Company, promoted by the Okayama businessmen, will be a steam light railway, gauge 3.6 feet, between Imbe and Toyomura in Okayama prefecture. The projected line will be 11 miles in length and is said to cost 380,000 *yen*. The new line projected by the last of the four companies, the Ushimado Light Railway Company, starts at the terminus of the above-mentioned railway and terminates at Ushimado, Oku-gun, Okayama-ken, being 8 miles 60 chains in length. The construction expenses are estimated at 370,000 *yen*.

MANCHURIA

Feeders for the South Manchuria Railway.—Details concerning the Sino-Japanese agreement *re* the five railways in project in Manchuria and Mongolia are progressing fairly, reports the *Manchuria Daily News*, and continues:—The construction funds amounting to Y30,000,000 are to be raised in European markets.

Traffic Earnings of Changchun Station.—During the year October, 1912, to September, 1913, the arrival of beans at the railway station at Changchun totalled 234,868 tons. During the half-year from October, 1913, to last March, the total arrivals reached 158,718 tons, and a further arrival of 28,410 tons is expected for the remaining half-year ending next September. Calculating on this basis, a falling-off by 47,740 tons will be noted against the present season. The railway traffic receipts at that Station have, however, been nearly as the previous season. From April, 1913, to last March, the total earnings reached Y. 2,552,867 as against Y. 2,556,610 for the preceding fiscal year, the difference in favour of the latter being only Y. 3,743.

South Manchuria Railway Co.—The traffic returns for the month of April gave a daily average of Y62,784, being a decrease from the corresponding month of last year by Y1,909.

THE PHILIPPINES

Operations in 1913.—The following is from the annual report of the Governor-General of the Philippines, under date September 25, 1913:—The program of railroad construction on the island of Luzon by the Manila Railroad Co. has been steadily carried out during the year. The construction of the lines of the Philippine Railway Co. on the islands of Panay and Cebu was practically completed during the fiscal year 1911, but the disposition of certain outstanding minor items caused the final closing of the accounts to be delayed, and to be still unaccomplished at the end of the fiscal year 1913. On August 9, 1913, however, a final bond issue was made, and the matter definitely settled. Since no action has been taken by the Legislature on the proposal to relieve the Company from the obligation to construct a line on the island of Negros, the Governor-General, on June 24, 1913, authorized the extension of time for its completion "until such time, as the Legislature shall have acted on the matter, or until such time as both parties to the contract shall desire its fulfillment."

On the northern lines of the Manila Railroad Co., the bonds of which are not guaranteed by the government, there were completed during the year 33.5 kilometers of grading, while 27 kilometers of track were laid and 13.3 kilometers were put in operation. On the southern lines, the bonds of which are guaranteed, 86 kilometers of grading were completed, 60.5 kilometers of track were laid, and 22 kilometers were put in operation. The total length of line put in operation was 35.4 kilometers. In the course of the year the main line north of Dagupan was declared in full commercial operation as far as South Bauang. The grading on the Baguio line was opened up for practically its entire length, while one of the necessary tunnels was nearly completed and the other well advanced; it is expected that this line will be finished by the beginning of the calendar year 1915.

Early in the fiscal year the bond section extending from Magdalena to Pagsanjan in Laguna Province was put in full commercial operation, thus completing the construction of that branch; and authority was granted, effective February 10, 1913, for the operation of the bond section from Tiaong to Lucena on the main line south. Work has been pushed steadily on the portion of the line beyond Lucena, which is to establish the first through land communication between Manila and the rich hemp-producing provinces of southern Luzon. This has been definitely located, subject to minor changes during construction, for nearly its entire length. At the end of the year the track laid came within 5 kilometers of the average necessary to complete the line, as authorized by Acts. Nos. 1510 and 1905, on September 12, 1918. In all, of the 1,312 kilometers authorized by law the Manila Railroad Co. had constructed at the end of the fiscal year 829 kilometers, of which 761 were in operation, leaving 483 to be constructed. Of this last much the greater part, 417 kilometers, pertain to the southern or guaranteed lines.

The lines of the Manila Railroad Co. were operated with success throughout the year; there were no heavy floods and the track was maintained in good condition for all lines. The company reports an increase in operating revenue for the calendar year 1912 as compared with the preceding year of 56 per cent., while the figures for the first six months of the current year promise a further heavy increase. The Philippine Railway Co. was less fortunate. The islands of Panay and Cebu were visited by severe typhoons, causing considerable damage to the track and bridges of the company and to the agricultural products that compose most of the freight; the traffic in consequence was adversely affected, and the operating revenue fell considerably below that of the preceding year.

Japan

CHOSEN (KOREA)

The Seoul-Wonsan Railway.—Along with the advent of spring, activity is shown with regard to schemes of railway construction in Korea. Work on the unfinished section of the Seoul-Wonsan railway has made more progress than originally expected. Over the entire line, except the section between Sijin and Kosan, 16 miles in length, where the work has met with most difficulty, construction cars are being run from both ends. Construction of dykes along the above section has been almost entirely finished, and 14 tunnels have also been successfully bored, the only portion of work unfinished being that on the interior of the tunnels. Progress has also been shown with regard to the construction of railway bridges, more than 20 in number, and it is expected that at this rate work on the entire line will be finished by the end of August next, and that traffic will be begun the following month.

The Chongjin-Hoiryong Railway.—The survey of the route of the projected Chongjin-Hoiryong railway and of an extension of the Seoul-Wonsan railway has already been begun by three surveying corps, each consisting of about 15 experts. One party is engaged in the survey of the route of the extension of the Seoul-Wonsan line and the two other corps are surveying that of the Chongjin-Hoiryong line. It is expected that the work will be entirely finished by the end of August next. Purchase of the land required will then be begun, and the laying of the rails will be set about early next spring.

GENERAL

Verkne-Udinsk to Kiakhta Line.—It is stated that the Russian Government has definitely decided to construct the railway from Verkne-Udinsk to Kiakhta. The cost of the line it is estimated will amount to about 23,740,000 roubles. Russia has long desired to build a branch of the trans-Siberian line via Kiakhta and Urga to Kalgan, and this is a tentative beginning.

COMPANIES

China Industrial Co.—The Chugoku Kogyo Kaisha or China Industrial Company, held its first ordinary general meeting of shareholders in the Tokyo Chamber of Commerce recently. Mr. Kurachi, the vice-President of the company, presided. Twenty-four shareholders, representing all the shares of the company, were present, including Mr. Nakano, Baron Shibusawa, Mr. Ohashi, Mr. Sun Po-shen, Mr. Chou Chin-piao, Mr. Li Shih-wei, Mr. Hu Tsung-ying, and Mr. Yang Shih Chi.

The chairman presented a report on the proceedings for the term just closed. In part he stated that during the term the company was occupied with the affairs relating to the inauguration of the company and did not set to real work. However, applications for loans to the number of nineteen were received from

China. Three of them for the amount of 11,300,000 *yen* were accepted after proper investigations into the nature of the applications were made. His report having been accepted by the meeting the chairman recommended a statement of accounts for the term together with the following profit and loss account:—

	Yen.
Net profit for the term...	8,911.33
Sinking fund for inauguration expenses	5,714.73
Carried forward to next account	3,196.60

All these accounts were duly carried after debate. Then a revision of the articles of association of the company was proposed and accepted. The revision mainly is in the change of the company's official title and the establishment of offices in Tokyo, Peking, and Shanghai. The company will henceforth go under the name of the China Japan Industrial Development Company, limited.

Baron Nakajima was returned as director from the Japanese side, and Messrs. Yang Shih-chi, Sun Po-shen, Chou Chin-piao and Si Shih-wei as directors, and Mr. Hu Tsung-ying as auditor were elected from the Chinese side.

Green Island Cement Co., Ltd.—The report presented to the shareholders at the twenty-fifth ordinary general meeting reads as follows:—

The Board of Directors have to lay before the shareholders a statment of accounts and balance sheet for the year ending December 31, 1913.

After allowing for Directors' and Auditors' fees, and providing $90,418,89 for depreciation on the Company's buildings, machinery, launches, lighters, etc., as per Articles of Association, the net profit, including the sum brought forward from the previous year, amounts to $102,241.71, which it is recommended should be carried forward to the credit of next year's account.

China Sugar Refining Co., Ltd.—The report of this Company states:—

The General Agents beg to submit to shareholders their report on the Company's business for the year 1913 with a statement of accounts to 31 December last.

The demand for the Company's Sugars has been restricted, partly owing to the troubles in the North during the first few months of the year, and partly to the large accumulation of stocks in China ports of both Japanese and Java white sugars.

The year's working resulted in a loss of $69,060.27, and a balance of $49,264.32 is carried to the debit of profit and loss account.

Shanghai Mutual Telephone Co., Ltd.—The report of the directors for the year ended March 31, 1914, contains the following:—

Telephones in use at the end of the year 5,187.

The amount available for appropriation is Tls. 138,808.57 which it is proposed to distribute as follows:—

To shareholders, Tls. 4 per share 14,540 Shares	Tls.	58,160.00
To directors' fees	,,	2,400.00
To the fund for equalization of dividends	,,	20,000.00
To reserve fund	,,	50,000.00
Carry forward to next year's account	,,	8,248.57
	Tls.	138,808.57

TRAMWAYS

Shanghai Tramways.—The returns of the Shanghai Tramways (Foreign Settlement) for week ended April 22, are as under:—

	1914. $	1913. $
Effective receipts (after deducting loss by depreciation of subsidiary coinage)	18,739.73	16,128.34
Passengers carried. . .	1,011,045	810,962
Car miles run	62,382	50,915

The loss by depreciation of subsidiary coinage for the week was $5,652.01 equal to 24.52 per cent. of the gross cash collected on the cars as compared with $4,523.95, equal to 23.26 per cent. for the corresponding week last year.

Week ended April 29.

	1914. $	1913. $
Effective receipts (after deducting loss by depreciation of subsidiary coinage)	19,027.06	14,671.77
Passengers carried. . .	1,025,714	733,068
Car miles run	62,112	48,984

The loss by depreciation of subsidiary coinage for the week was $5,797.42 equal to 24.72 per cent. of the gross cash collected on the cars as compared with $4,084.20 equal to 23.27 per cent. for the corresponding week last year.

Week ended May 6.

	1914. $	1913. $
Effective receipts (after deducting loss by depreciation of subsidiary coinage)	19,952.45	18,559.36
Passengers carried. . .	1,057,096	941,406
Car miles run	64,570	53,892

The loss by depreciation of subsidiary coinage for the week was $6,201.34 equal to 24.95 per cent. of the gross cash collected on the cars as compared with $5,306.79 equal to 23.37 per cent. for the corresponding week last year.

Week ended May, 13.

	1914. $	1913. $
Effective receipts (after deducting loss by depreciation of subsidiary coinage)	19,120.79	17,688.02
Passenger carried. . . .	1,052,624	887,496
Car miles run	62,567	52,856

The loss by depreciation of subsidiary coinage for the week was $6,024.02 equal to 25.27 per cent. of the gross cash collected on the cars as compared with $5,136.31 equal to 23.69 per cent. for the corresponding week last year.

Week ended May 20.

	1914. $	1913. $
Effective receipts (after deducting loss by depreciation of subsidiary coinage)	17,760.41	17,355.94
Passengers carried . . .	972,366	884,149
Car miles run	62,262	53,410

The loss by depreciation of subsidiary coinage for the week was $5,548.11 equal to 25.23 per cent. of the gross cash collected on the cars as compared with $4,956.68 equal to 23.43 per cent. for the corresponding week last year.

BANKS

International Banking Corporation.—The board of directors of the International Banking Corporation at its meeting on April 10 voted a semi-annual dividend of $3 per share, thus putting the shares on a 6 per cent. basis. This reflects the steady progress which this bank has made since 1910, when its profit and loss showed only $55,000, and it was not paying dividends. But in 1912 the profit and loss having been steadily increased to $600,000, dividends were commenced on a 5 per cent basis. The statement of December 31, 1913, shows deposits of over $20,000,000 and undivided profits of $773,000.

Deutsch-Asiatische Bank.—The annual report of the Deutsch-Asiatische Bank, reviews the financial status of China and suggests that the second instalment of the big loan should be used to play floating debts and foreign creditors and for the redemption of notes issued by the southern provinces. The report further states that construction work on the Hankow railway will commence at once and that the Shantung railway again paid a dividend of seven and a half per cent. The report also dwells on the improvements progressing in China as evidenced by the reform measures being energetically and quietly instituted by President Yuan Shih-kai.

Russo-Asiatic Bank.—At the General Meeting which took place in St. Petersburg on May 20th the Russo-Asiatic Bank declared, for the year 1913, a dividend of 10 %.

PERSONAL

Baron Shibusawa, the well-known Japanese financier, visited China early in May.

Mr. W. W. Rockhill, formerly American Minister at Peking, who has been investigating conditions in China, returned to America in May.

Mr. N. J. Stabb, Chief Manager of the Hongkong and Shanghai Banking Corporation has left for England on leave.

Mr. George Anderson, the United State Consul General at Hongkong, left for the United States on May, 13, by the *Empress of Russia*. Mr. Anderson is going home partly on official business and expects to return to Hongkong in September.

Professor Anderson, the new Mining Adviser to the Republic, accompanied by Mr. Erik Nystrom, has arrived in Peking.

Mr. J. Stewart, of the Kailan Mining Administration, in Tientsin is joining the Salt Administration.

M. Rozier, of the Banque de l'Indo-Chine at Hankow, is going to Tientsin to take the place of M. Cornu.

Mr. J. J. Bahnson, General Manager in China and Japan of the Great Northern Telegraph Company, has received the Third Class Order of the Rising Sun in recognition of services rendered and Mr. I. Sorensen, of the Shanghai office of the company, has received the Sixth Class of the Order of the Sacred Treasure.

Mr. W. R. Randolph has been appointed Chief Engineer of the American Section of the Hankow-Szechuan Railway. Mr. Randolph has been acting as Chef Engineer for some time, but he has only just recently received the official appointment.

Mr. F. A. Harris, who has been to Hankow for the past three months, where he has been Chief Accountant of the Hankow-Canton Railway, has returned to the Peking-Mukden Railway at Tongshan.

The *Peking Gazette* reports that Men Ken-yuan, the late Tutuh of Kirin, contracted a loan of $10,000,000 for the reorganisation of the administration with a German firm. The Provincial Government of Kirin has sanctioned the loan.

MINING

Mines in Indo-China.—From a recent return it appears that the output of coal in Indo-China in 1912 was 427,000 tons, against 437,000 tons in 1911, of which the Hongay mine produced 306,000 tons, or about 75 per cent. The output of zinc ore, chiefly concentrated at Lang-Hit and Thanh-Mof, amounted to 28,387 tons of which 25,172 tons, with a value of f.3,401,500, were exported. In 1912 240 tons of tin and tungsten ores were produced in the mines of Pia Ouac. The output of gold amounted to kg.85, the only mine at work being at Bong-Miu. The different mines gave employment to 12,000 persons, 150 being Europeans and 11,900 Asiatics, of whom 2,000 were Chinese.

Export of Tin From Hongkong.—There were some notable developments in the export trade in tin from Hongkong in 1913, the United States being the chief factor in the change. The total amount of tin exported during the year fell off materially from the exports of 1912, which were in fact abnormally large as a results of the sudden development of mining plants in Yunnan Province on a modern scale, as well as the sudden release of stocks held in the interior by interference with transportation facilities, reports Mr. George E. Anderson, American Consul-General at Hongkong. Shipments to the United States, however, increased largely, thus marking a breaking away of the American trade from its European connections in which tin was purchased in the Far East and shipped to Europe and thence to the United States, whereas now larger portions of the exports are proceeding direct. Exports of tin from Hongkong to the United States in 1913 amounted in declared value to $1,632,213, as compared with a declared value of $1,404,115 in 1912 and $798,941, in 1911, the exports previous to that time being too small to merit separate enumeration in the returns. This increase in shipments to the United States has been directly at the expense of Europe. Returns of the Hongkong General Chamber of Commerce show that the exports of tin from Hongkong, in slabs of 112 pounds, during the past two years have been as follows:

Destination.	1912 *Slabs*	1913 *Slabs*
United States	27,551	36,790
Great Britain	24,752	8,047
Continental Europe	63,772	32,575
Total	116,075	77,412

The movement of tin to the United States occurred chiefly in the first two quarters of the year, the declared value for the March quarter having been $764,092 and that for the June quarter $511,135, the half year constituting more than three-fourths of the whole. The year's trade opened briskly with comparatively high prices and with a decided advantage in favor of Chinese tin as compared with tin from the Straits Settlements and from other parts of the world. A fall in prices in the summer, however, temporarily stopped the movement. With the beginning of the new year shipments have been renewed at a largely increased rate.

The output of the metal from the Yunnan mines during the year is placed by the trade at about 14,000 tons, as compared with about 10,000 tons in 1912, but owing to various disturbances and disorder the total output anticipated by the trade was probably not reached. There was some accumulation of stocks in Hongkong during the latter part of the year, the close of the season witnessing about 13,500 piculs of $133\frac{1}{3}$ pounds each, valued at about $750,000, on hand. Exports during the opening months of 1914 have been large.

Korean Mining Companies.—The Seoul Mining Co., operating the Suan Concession, in Whang Hai province, Korea, reports the following results for March 1914:

Stamps working	40
Time, days	28.75
Ore crushed, tons	6,340
Total recovery	$47,832
Operating expenses	22,500
Net earnings	25,332

The Oriental Consolidated Mining Co. reports that in January the Kuk San Dong 40-stamp mill worked only 15 days, and the Tabowie 80-stamp mill 25 days, on account of ore and water shortage, respectively. The 240 stamps worked 24.7 days. crushing 24,705 tons, yielding $143,757. The net profit was $47,292. In February the tonnage of 21,954 yielded $149,084. There was a further shortage of water. Lessees are working at the Kuk San Dong mine. It is intended to lease the Candlestick mine, and large numbers of Koreans came to the property to be on hand to get a portion. The Taracol cyanide plant treated 1797 tons of concentrate, yielding $45,576, with 83% recovery. The results are gratifying.

Tin Mining In Siam.—A local company has been formed under the title of the Nai Sok Tin Mining Company, Ltd., and is now in process of registration according to Siamese law, says a recent issue of the *Bangkok Times*. The capital of the new venture is Tcs. 150,000 divided into 1,500 shares of Tcs. 100 each. Seven hundred fully paid shares and Tcs. 10,000 in cash will be paid to the vendors and promoters, as purchase price of the property and for the services of the latter. The whole of the 800 shares offered for public subscription have already been taken up. The property acquired by the Company has hitherto been worked by Towkay Kaw Joo Chin, and is situated in the district of Langsuan. It consists of a block of land about 102 rai in extent situated on a hill eight miles long by one wide. The lease is held for twenty-five years from the Siamese Government, dating from July 126. The mine has been reported on by Mr. R. Schulz. From the town of Langsuan it takes three days by river to reach Paksong, the landing place for the mine, and from this point the mine is distant some four to five hours by elephant.

Kailan Mining Administration. — The total output of the Administration's mines for the week ended March 4, amounted to 60,720.50 tons and the sales during the same period to 54,685.08 tons.

Week ended April 11, output 61,176.90 tons, sales 60,442.56 tons.

Week ended April 18, output 63,136.47 tons, sales 56,919.48 tons.

Week ended April 25, output 61,810.55 tons, sales 63,644.11 tons.

Week ended May 2, output 65,146.57 tons, sales 64,151,37 tons.

Week ended May 9, output 65,961.46 tons sales 64,524.02 tons.

Operations in Manchuria.—A correspondent writes from Mukden under date May 13:—The Penshit'ing Coal Mining Co. seems to be obtaining a large quantity of coal especially the fine dust called "mei," which is largely used in open fireplaces, mixed with clay for cooking, etc. Formerly the hill above the town was like a lot of large rabbit warrens, where natives laboriously dug the coal in a most primitive manner, but now a large tunnel runs into the mountain at its base and thousands of tons come out in trucks. One notices that the Company have erected two large blast furnaces presumably to work the fine iron ore near by, There is an abundant supply of suitable limestone all around and hence the iron industry, which in by-gone ages is said to have flourished in Penshit'ing may once more revive. The town is on the T'aitze river which runs past Liaoyang, and is about thirty miles south by east of Mukden on the Antung line. Further east there are known to be splendid and easily worked beds of first class iron ore, especially magnesian, yielding, even to crude native methods 60 per cent. of metal, and coal always near.

FINANCIAL

German Finance in China.—In the course of the discussion of the Foreign Affairs Estimates in the Budget Committee of the German Reichstag the Reporter said that German influence in China was apparently receding, and demanded more German salaried Consuls and trade experts. Herr von Jagow, the Foreign Secretary of State, declared that Belgium had secured particularly important concessions in China, but he could not say whether Belgian capital alone was concerned. He referred to the preliminary agreements in regard to harbour and railway concessions obtained by the French Bunque Industrielle de Chine, in return for a loan of f. 150,000,000, and expressed regret that German finance held aloof. The Government, he said, keenly desired the participation of German finance in the development of China. Besides the Deutsch-Asiatische Bank, a second German group was being formed which would provide finance and industry with a basis for far-reaching activity in China. Herr von Jagow added that the development of the Consular service was receiving full attention. A third commercial expert, to reside at Canton, would be appointed as soon as a suitable person was available.

Further information bearing on the matters mentioned above is given in a lengthy communication from the Peking correspondent of the *Frankfurter Zeitung*, who, after dealing with recent enterprise on the part of certain nations in China, reports that German financial circles who are not associated with the German Asiatic Bank intend to form a new group which is specially to handle industrial problems in China.

The German Foreign Office has been approached in the matter, and the Secretary of State is said to have promised his support. It is proposed to proceed independently of the German Asiatic Bank, although no trade contest is in contemplation, as the scope of activity is to be divided. Thus the latter institution will continue to occupy itself with the financing of the Chinese State, whilst the new group will devote itself to the economic side of the question, with which the German Asiatic Bank, as shown by experience had been unable to deal in consequence of other demands made upon it.

The existing group under the circumstances should not be opposed to the proposed new group, but should the correspondent remarks, welcome the creation of a second group which would be able to complement it; and rightly expect that the financial powers now behind the German Asiatic Bank will also participate in the work of the new group when it has first gained a footing in China. It is not intended to form the new syndicate on a narrow minded basis, as it is also to include Austrian financial interests. When the new group has been brought into existence a corresponding combination of German manufacturers is to be formed for the promotion of trade with China and the carrying out of industrial works, as may be assumed, financed by the new group.

The correspondent proceeds to state that a number of foreign groups have recently been constituted for the "industrialisation" of China, most of which permit of Chinese participation. Foreign companies which have on their name-signs also the word "Chinese," are popular in China, especially when the promoters belong to a friendly nation, and they are certain of every support when important Chinese interests are invested in them. For these reasons it is suggested that the new group should be formed as a German-Chinese company, and that it should seek a connection with influential Chinese circles as soon as possible, whilst at the same time it is hinted as being desirable that the group should deal with great China and not be located in Shantung, with Tsingtau as its base.

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